JULY, 1959

AMATEUR RADIO

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AMATEUR RADIO

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AMATEUR RADIO

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WI BROADCASTS

All Amateurs are urged to keep these frequencies clear during, and for a period of 15 minutes after, the official Broadcasts.

VK2WI: Sundays, 1100 hours EST, simultaneously on 3575 Kc., 7146 Kc., and 146.0 Mc. Intrastate call-backs taken on 7050 Kc. only at present.

VK3WI: Sundays, 1130 hours EST, simultaneously on 3573 and 7146 Kc., 51.016 and 146.25 Mc. Intrastate working frequency 7135 Kc. Individual frequency checks of Amateur Stations given when VK3WI is on the air.

VK4WI: Sundays, 0900 hours EST, simultaneously on 7146 Kc., 14.342 Mc. and 50.172 Mc. Country hook-up Sunday mornings 0900 hours. Please call VK-4ZM on 80 mx and Bruce VK4ZBD on 6 mx.

VK5WI: Sundays, 1000 hours SAST, on 7146 Kc. Frequency checks are given by VK5MD and VK5WI by arrangements on all bands to 56 Mc.

VK6WI: Sundays, 0930 hours WAST, on 7146 Kc. No frequency checks available.

VK7WI: Sundays at 1000 hours EST, on 7146 Kc. and 3672 Kc. No frequency checks are available.

VK9WI: Sundays, 0830 hours EST, simultaneously on 3650, 7146 and 14342 Kc. Individual frequency checks of Amateur Stations given when VK9WI is on the air.

EDITORIAL

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THE W.I.A. I.T.U. FUND

The Federal Executive, Federal Council and Divisional Councils of the Wireless Institute of Australia express their thanks to all the Members, Non-Members, Short Wave Listeners, Trade Houses, Overseas Societies and Amateurs who have so willingly subscribed to the Institute's Fund to finance its own accredited Amateur representative with the Australian Delegation to the International Telecommunications Union Conference due to commence in Geneva this August.

After deducting the expenses attached to organising such a fund, the current nett total has reached £2,000—a most heartening indication of the seriousness with which the necessity to send our own representative was considered by those who contributed.

Readers will remember that our estimated target figure requirement was to reach a sum of £2,500. Taking into account that many contributions were in excess of the £1 requested and that from 3,800 licensees a maximum of £3,800 was possible without contributions from non-licensed people, it is obvious that it is still possible to reach the target figure.

The Fund will close on 31st July and we are appealing to those who have not contributed to support the Fund before the closing date.

It is common knowledge now that the Wireless Institute of Australia, with the assistance of Honorable Members of the Australian Government, has done all in its power to protect the current frequency allocations for the use of all Amateurs. Can we therefore anticipate your donation during the closing weeks?

Elsewhere in this issue is a brief summary of the contributions received for the Fund. A final balance sheet will be published after the Fund closes and any balance in hand after the Geneva Conference concludes will be directed to providing some service for the benefit of all Australian Amateurs, not for only those who are members of the W.I.A.

A tremendous effort has gone into making a stand on behalf of Amateur Radio and never before has it been so urgent for unity of thought and action as it is right now. Your cherished and unique hobby is in jeopardy! You have reached a critical stage in the position of Amateur Radio in the ever widening sphere of communications. What happens at Geneva could well effect the functioning of the Amateur Service the world over. Irrespective of petty grievances, irrespective of whether you are a member of the W.I.A. or not, irrespective of all thought to the contrary, you should support your own representative at the forthcoming Geneva Conference.

FEDERAL EXECUTIVE.

THE CONTENTS

Wireless Sets No. 22 and No. 122

Modifications Compiled and Tested by W.I.A. Publications Committee

THESE popular items of disposals equipment are finding great favour with Amateurs, many of whom have agreed to pass on the results of their developmental work through these columns.

Briefly, the two types are basically the same, but the 122 set provides for the use of two crystals in addition to the v.f.o., which is common to both.

The circuitry is that of a transceiver, operating from a primary source of 12 volts to a twin vibrator supply which provides an input power of approximately 20 watts c.w. and 10 watts on phone on two switched bands; 2-4 Mc. and 4-8 Mc. Valves used in the receiver and speech amplifier sections are of the 2 volt, directly heated variety, but the transmitter uses a 6U7 m.o., 807 p.a. and a 6N7 modulator. These heaters can be switched off to reduce battery drain to 0.9a. for listening only. Primary current on transmit is 6.3 amps.

It is not within the scope of this article to give a detailed description as it is considered that persons desiring to carry out modifications would be well advised to obtain a copy of the official handbook. The circuitry is difficult to follow and there is very little space for working among the closely spaced components. However, for those who are not familiar with these transceivers, a few more details could be of interest. Adequate metering facilities are provided, including a.v.c., drive, receiver h.t., transmitter h.t., and battery voltage. A b.f.o. with pitch control, together with separate r.f. and audio gain controls, plus a rather mediocre noise limiter give reasonably good control for Amateur operation. The output is through a pi-coupler which needs constant maintenance to ensure good contact. Push-to-talk operation and keying is accomplished by relays.

The units are true transceivers in that the transmitter frequency on v.f.o. operation is the frequency to which the receiver is tuned. It must therefore be emphasised that the lining up procedure must be thorough and great care should be taken not only in lining up according to the manual, but in the avoidance of adjacent channel QRM during operation.

It has been a general opinion that these units lack audio. With a desire for a higher percentage of modulation, a series of modifications were carried out and these are given below. However, it is considered by some that the desired results can be achieved without any modifications, simply by using a microphone with a much higher output. Some of these microphones are available and have been heard in tests with several VK3 stations. The one disadvantage appears to be that the increased sensitivity picks up background noise—mainly vibrator hum.

AUDIO

For those who prefer the original dynamic microphone, the following modifications will increase the modulation percentage:

(1a) Earth the cathode of the 6N7 modulator. The cathode is normally connected to the positive side of the heaters and this bias can be removed with safety.

(1b) Remove R4A from the grid of the 1F5 audio driver. If instability occurs, replace with an r.f. choke right at the socket—not in the resistor position.

(1c) Increase the plate load on V1C to 125K. It is normally 25K (R36B). The easy way is to lift one end and put 100K in series. Likewise increase the screen resistor to 600K. It is 100K (R4B), so put 500K in series. By-pass these at the h.t. end with a 0.01 μF. capacitor.

This modification increases the gain of the microphone pre-amplifier.

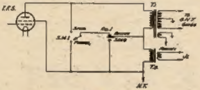


Fig. 1.

T1—Existing driver transformer.
T2—Miniature speaker transformer.
Sw1—is the normal/remote s.p.d.t. switch.
Rel1—Existing relay RL4, modified by removing the "break/right" springset (contacts 21 and 22) and replacing with a change-over set.
J1—Existing jack marked "Line".

Some sets have given trouble with low frequency instability on phone. The following treatment was found to be effective:

(2a) By-pass h.t. at R5A in the plate circuit of V3A with an 8 μF. electrolytic capacitor. There is ample room for this near R5A.

(2b) Add a screen by-pass to the 1F5 audio driver. This does not appear to be necessary in all cases, but has been found useful when instability has resulted following circuit changes.

Whilst some operators have endeavoured to change the frequency response in the modulator circuitry, others have obtained good results by leaving this severely alone. These modifications have been suggested and are given merely as a basis for individual experiment.

(3a) Remove the inverse feedback components R5B and C17A. This feedback only levels out the response of the receiver. High frequency response is said to be better.

(3b) Decrease coupling condenser C16E to 0.002 μF. This is to decrease the low frequency response.

SELECTIVITY

Receiver selectivity has been claimed to be improved by removing the resistors which are in parallel with the i.f. coils. As these resistors have values of 500K and 750K, it was decided to test two unmodified receivers against one from which all the relevant resistors had been removed. All sets were aligned and readings taken to determine bandwidth. It is extremely doubtful whether any improvement comes from this difficult modification and it is therefore not recommended.

Better results were obtained by the use of a Q Multiplier connected by co-axial lead to the mixer plate.

POWER INCREASE ON PHONE

Increased power is possible for phone work only by adding a toggle switch to the power supply and connected between pin 5 on the power outlet plug and ground. When this switch is closed, RL1 is energised and power input is increased to approximately 18 watts. This modification is beneficial if increased modulating power is made available. Increased voltages make the receiver more sensitive (and noisy).

Care should be used with this modification for two reasons, (a) return the toggle switch to "off" before switching on the b.f.o., otherwise the transmitter will come on; and (b) when switched to high power, re-tune and re-net.

After careful testing, it was concluded that the advantage, if any, gained by the increase of power was more than offset by the undesirable effects resulting from lack of regulation.

RECEIVER AUDIO OUTPUT

A proven method of obtaining ample loudspeaker output is illustrated in Fig. 1.

The speaker transformer was mounted under the chassis in the compartment under the 1F5. Shifting the tag strip from the rear wall permits this and the same mounting holes suffice. The tap strip is re-located under the chassis on a bracket held by a mounting screw which holds the bank of electrolytic relay delaying condensers. This new position shortens the wiring to the tag strip.

In operation, the selector switch gives the type of operation desired with no loss of efficiency on transmit. It will be seen that transformer not required is shorted out and the 1F5 is never without voltage on the plate.

Another method is to use the two existing break contacts (21, 22) and J1 as previously mentioned but use a speaker with a 200 ohm line transformer. This can be made up from a normal speaker transformer by dismantling the core, unwinding the secondary and then take off turns from the primary until a d.c. resistance of 50 ohms remains. Take out flexible leads, add an insulating layer and then rewind the primary and reassemble the core. The output obtainable by this method is not as great as that which is illustrated.

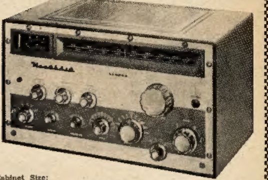
MAINTENANCE

Briefly, all that is necessary to get really good performance from a 122 set is to ensure all relay contacts are clean

(Continued on Page 16)

THE WARBURTON FRANKI PAGE

BUILD YOUR OWN AMATEUR TRANSMITTER with a *HEATHKIT "SENECA"* MODEL VHF-1



IT'S EASY & IT'S FUN. The famous Heathkit construction manual makes everything so simple. You get easy-to-follow detailed information that even explains proper soldering procedure. You just can't go wrong.

SPECIFICATIONS

Power Input	6 metres: 140w. CW, 120w. Phone (peak). 2 metres: 110w. CW, 95w. Phone (peak).
Output Impedance	50-72 ohms (nonreactive)
Output Coupling	Link (coaxial)
Operation	Crystal-VFO, CW-Phone.
Band Coverage	50-54 Mc., 144-148.3 Mc.
Audio	Screen modulated, controlled carrier.
Standby (phone, CW)	120 watts.
Full load (phone, CW)	400 watts (intermittent).

Cabinet Size:
16⅝" wide
10⅛" high
10" deep.
Net Weight:
50 lbs.
Shipping Weight:
62 lbs.

PRICE:
£169 + 12½% S.T.
Dep. £38/2/6 ● 12 monthly payments of £14, or 18 monthly payments of £10.

BUILD YOUR OWN OSCILLOSCOPE with a COSSOR KIT SET . . .

★ SAVE HALF THE COST OF A PRE-ASSEMBLED INSTRUMENT AND ENJOY THE THRILL OF BUILDING YOUR OWN.

★ A COMPREHENSIVE INSTRUCTION BOOK IS PROVIDED AND SUCCESS IS GUARANTEED.

SINGLE BEAM OSCILLOSCOPE KIT Model 1045K

This kit can be assembled to provide an invaluable instrument incorporating two printed-circuit boards and nine miniature valves. Features include X and Y amplifiers of high gain and broad frequency response, a wide range of time-base speeds, fly-back black-out, a calibrating voltage, and facilities for intensity modulation.

CATHODE RAY TUBE

Cossor 4 in. (10 cm.), single beam. Type 88D with green fluorescence, operating at 1.3kv.
X sensitivity direct to plates: 630/Va3 mm/V d.c. (21 V/cm.).
Y sensitivity direct to plates: 950/Va3 mm/V d.c. (13.7 V/cm.).

Y AMPLIFIER

Gain variable from zero.
Maximum sensitivity 50 mV/cm.
Freq. response: 5c/s. to 3 Mc/s. (plus or minus 3 db.).
Output deflection:
8 cm. at 3 Mc/s.
3 cm. at 7 Mc/s.
Useful response to 10 Mc/s.
Rise-time 0.12 µsec.
Overshoot less than 10%.

TIME BASE

Repetitive operation. Synchronised from positive or negative pulses derived externally or from the Y amplifier. Expanded time-base amplitude continuously variable from zero.
Time-base frequency ranges:
10 c/s. to 100 c/s.
100 c/s. to 1,000 c/s.
1 kc/s. to 10 kc/s.
10 kc/s. to 100 kc/s.
100 kc/s. to 500 kc/s.
Ranges cover sweep velocities from 10 msec./cm. to 0.2 µsec./cm. Fly-back suppressed on all ranges.

X AMPLIFIER

Gain variable from zero to x 28.
Maximum sensitivity 0.75 V/cm.
Freq. response 2 c/s. to 275 kc/s. (plus or minus 3 db.).
Rise-time 1.4 µsec.

X SCAN

Switch selects X Scan from:
Time-base generator;
X amplifier for external signals;
X amplifier with 50 c/s. sinusoidal input having continuous control of phase from 0 to 135 deg.

INTENSITY MODULATION

Coupling through 20 msec. time constant to CRT grid.

POWER SUPPLY

Mains: 200v. to 215v., 216v. to 234v. and 235v. to 255v. a.c. 100v. to 125v. to order.
Frequency: 50 c/s. to 100 c/s.
Consumption: 80 W.

CALIBRATION

1V peak-to-peak internal source at mains frequency.

SIZE & WEIGHT

Height 14¾ in. (37.5 cm.).
Width 9 in. (22.9 cm.).
Depth 18 ¼in. (46.4 cm.).
Weight 18 lb. (8.2 kg.).

★

£76/14/0 + 12½% S.T.
Dep. £22/5/0.
12 monthly payments of £6.

★

Also Available:
DOUBLE BEAM MODEL 1071K
£120/8/9 + 12½% Tax.
Dep. £35/9/10. 12 monthly payments of £9/7/6.

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WARBURTON FRANKI
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OPEN SATURDAY MORNINGS

The "Mickey-Match"*

A SIMPLIFIED S.W.R. INDICATOR AND OUTPUT MONITOR

ROBERT C. BUNCE, K6QHZ

● Here is an ingenious version of the Monimatch, using a form of construction that eliminates a few components and, in doing so, simplifies the electrical problems. The key is the use of flexible co-ax cable (reminiscent of the co-ax Twin Lamp) for the line section, making it possible to have the input and output connections close together.

In view of the current popularity of s.w.r. indicators of all varieties, we thought we might as well throw this little piece of gear into the ring. Because the instrument lends itself to a compact mounting box we were about to name it "Minimatch," but that seemed rather common so we took the next name that came to mind—Mickey.

Enough of that. Little Mickey is just an off-spring of the Monimatch. We started out to make the Monimatch originally, but couldn't find a piece of sheet metal of the proper dimensions around the shack. Discouraged, we sat down and cogitated. Suddenly the light dawned. The pick-up trough of the original Monimatch is really nothing but a piece of co-ax with one side missing to let some r.f. out. Now, if you could just take a plain ordinary piece of co-ax and slide an insulated wire **under** the shield, it would pick up r.f. just like the old Monimatch line . . .

It worked. In fact, as the final design took shape this one modification led to several other design short cuts that add up to an extremely simple, and surprisingly accurate, s.w.r. indicator. To enumerate: since co-ax is flexible, and the field entirely confined inside the shield, the pick-up section can be **rolled up** and put in a small box of common dimensions. When rolled up, the input and output connectors can be placed close to each other, and the two end leads from the pick-up line can be brought out near each other. In the final version these leads are brought directly to a switch, kept short, and the r.f. is switched. Exit one crystal diode, and with it the problem of matching diodes—a single diode detects both forward and reflected power.

One other modification was the clincher. A later version of the "daddy" Monimatch uses a fixed line-terminating resistor, and the impedance of the pick-up line is adjusted by varying its proximity to the main conductor until the impedance equals the value of the resistor. With the Mickey-Match, it is obviously impossible to vary the spacing in this manner, but the **resistance** is varied instead; i.e., the pick-up line is terminated in a potentiometer which is adjusted to equal the impedance of the pick-up line.

* Reprinted from "QST," November, 1958.

CONSTRUCTION

The unit pictured and described here is designed for power levels between 10 and 200 watts and uses 73 ohm RG-59/U, although a 53 ohm version, using RG-58/U, could be built in exactly the same manner. Parts required are listed under the schematic diagram, Fig. 1. The components are mounted in a 3" x 4" x 5" aluminium box, with the meter and selector switch on top, the sensitivity potentiometer on one end, and the two coaxial connectors on the other end, near the switch. The terminating potentiometer is mounted inside on a bracket, since it only has to be adjusted once, during calibration.

Construction of the pick-up section is shown in Fig. 2. To make it, use a piece of RG-59/U (or 58/U) about 16" long. The length isn't critical. Strip the outer jacket from the entire piece. Bunch the shield together into the middle of the line, and work a hole through the bunched braid about ½" from each end. Thread a piece of thin insulated wire (the thinner the wire the better; we used No. 30 enamelled in this version) through one hole, under the braid, and out through the other hole. It's easy if you feed through a stiff wire first, and use it to pull the thin wire through. Stretch the braid back over the co-ax centre conductor, with the insulated wire inside, and the section is made. Instal co-ax connectors and connector hoods (those funnel-shaped things) on the ends on the line.

Fig. 3 shows how the co-ax is looped and installed around the meter in the box, with the pick-up line ends connected directly to the switch. Keep these leads as short as possible to prevent unnecessary reactance from creeping into the act.

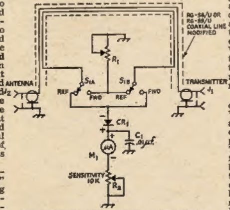
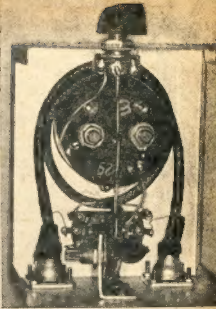


Fig. 1.—Circuit of the co-ax line s.w.r. indicator.

C1—Disk ceramic.
CR1—1N34 or equivalent.
J1, J2—Co-ax chassis receptacles.
M1—0-200 microammeter, or other range depending on sensitivity desired.
R1—200 or 250 ohm carbon variable.
R2—Potentiometer, linear or log taper.
S1—D.p.d.t. "tone-control" switch.

(Note: Values as high as 500 ohms may be used for R1 if lower values are not readily available, but the higher the value the more critical the adjustment.)



This inside view shows the co-ax line section looped around the body of the microammeter. The forward-reflected switch, terminating potentiometer, and crystal diode are between the two co-ax fittings at the top. The variable resistor at the bottom is the sensitivity control.

The inside-view photograph shows the general wiring details. Remember that crystal diodes don't like heat; hold the leads in a pair of long-nose pliers while soldering, solder quickly, and keep hold of the leads until the solder joints cool. Keep the r.f. leads as short as possible, with one lead from the crystal connected directly to the jumper across the switch and the other to a tie point, with the by-pass capacitor connected straight to the ground lug. We removed the back cover from the terminating potentiometer to reduce internal capacitance and it helped reduce residual reactance, particularly on ten metres.

Before the completed unit can be checked out, you'll need a dummy load. We made a 70 ohm load by soldering a tremendous quantity (80, to be exact) of 330 ohm, 2w. resistors in a series-parallel arrangement that came out to 70 ohms. We happened to have a basket full of the things and they worked well, but any combination of **carbon** resistors that adds up to 50 or 70 ohms, as the case may be, and that, in toto, will handle the power output of your transmitter, will do the trick. Non-inductive loads also are available commercially. Don't try to calibrate with a light bulb—it "just don't work." Light bulb filaments vary all over the lot in resistance, and they have a ten-to-one or better ratio of hot resistance to cold resistance.

ADJUSTING R1

The forward-power switch position is labelled "Calibrate" and the reflected-power switch position "Read" (meaning

"Read s.w.r. in this position"). To adjust R1, leave the cover off the instrument. Attach the dummy load to the antetnna connector, and the transmitter output to the transmitter connector. Set the selector switch to the "Calibrate" position. Energise the transmitter on 10 metres, or the highest band used, and load the transmitter into the dummy. If the meter goes off scale, and it probably will, turn the sensitivity control R2 until it comes back on scale.

Now switch to the "Read position, and adjust the sensitivity control for as high a reading as possible, keeping the needle on scale. Turn the terminating potentiometer R1 for a null in the meter reading. If your dummy load is reasonably good the null will be extremely deep—the meter reading should drop almost to zero. The unit pictured nulled out to less than 5 μA. on 10 metres with the sensitivity potentiometer full out, and with 50 watts of r.f. in the load. The setting where the null occurs will vary all the way from 20 ohms to 160 ohms, depending on the size of the pick-up wire and dielectric constant of its insulation. The setting of this resistor (at the null) is the characteristic impedance of the pick-up line. The higher this final impedance, the more sensitive the instrument. The version pictured, using No. 30 enamelled wire, nulled out at about 90 ohms, and the sensitivity is about the same as earlier versions of the Monimatch.

To check out the over-all balance of the instrument, turn the switch back to the "Calibrate" position and adjust the sensitivity control for a full-scale reading. Switch back to the "Read" position and re-check to make sure the null is still complete. Then connect the transmitter to the antenna jack and the dummy load to the transmitter jack. The null reading should now occur with the switch in the "Calibrate" position, and the full-scale reading should occur with the switch in the "Read" position; i.e., the functions reverse. If the reversed readings exactly (or almost exactly) equal the original readings, the instrument is in good shape. There was no detectable difference in these readings with the unit pictured.

With this adjustment, replace the cover, and you can use the thing to adjust antennas with no further ado.

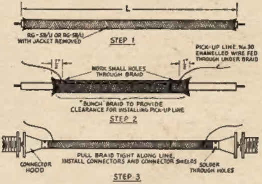


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Fig. 2.—Construction of the line section. If enamelled wire is used, be careful not to scrape off the insulation when the wire is drawn through the braid. Length "L" can be varied to suit power level; sensitivity increases with frequency and with increased length of line section. The instrument shown in the photograph uses a 18-inch length for reasonable sensitivity over the 3.5-30 Mc. range with power levels of 10 to 200 watts.

★

OPERATION

In actual use, it is only necessary to set the switch to the "Calibrate" position, rotate the sensitivity control for a full-scale deflection, and switch to the "Read" position. To use the instrument while adjusting or pruning antennae, or for adjusting link-coupled antenna tuners, you don't need any graphs (although it is possible to calibrate for s.w.r. and power). Just set the switch to the "Read" position and, with power in the antenna, adjust the antenna or the tuner for minimum meter reading.

If you want to make a kilowatt version, use a bigger box and RG-8/U or RG-11/U. The meter can be less sensitive (a 0-1 mA. meter will work well), or the pick-up section shorter, but the principles are the same.

If you have an extremely low-power transmitter, the forward readings on the 80 and 40 metre bands may be less than full scale, or even half scale, with the sensitivity pot. full out. This can be overcome by using a longer piece of co-ax for additional pick-up. You can coil up as much of the stuff as necessary, with no effect on the performance. However, a full-scale deflection isn't actually necessary to the functioning of the instrument, just so enough of a forward reading is obtained to allow a good comparison with the reflected reading.

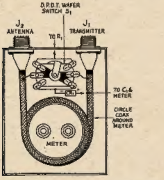


Fig. 3.—Installation of the line section. R.f. leads should be kept as short as possible, but d.c. leads can be as long as desired. Longer line sections can be installed by wrapping more turns around the meter.

PREDICTION CHART, JULY '59

The Sledge-Hammer Special—A 2 Metre Transmitter

W. STEVENSON,* VK3AWS

THOSE who attempt a crystal control transmitter for 2 metres soon find that the greatest difficulty lies in getting enough drive to the final, so why not design the exciter portion with an ample output, rather than one that may be inadequate?

This, of course, is the caddish approach,[1] and in deference to the "squeeze-the-last-mA-out-of-the-triode" boys, the name "Sledge-Hammer Special" was chosen.

Any 8 Mc. crystal works it—no need to select overtone-active crystals. The crystal current is less than 20 mA. so that no crystal heating occurs. Due care is required to find the best spacing between the two sets of inductively coupled coils L3-L4 and L5-L6, but otherwise the adjustments are not too critical.

the output was not enough. As it stands, the "Sledge-Hammer" has ample grid drive to each stage.

With an overall plate supply voltage of only 230 volts, the input to the final runs at 10 watts with grid drive of 2 mA. (and drive to spare).

LAYOUT

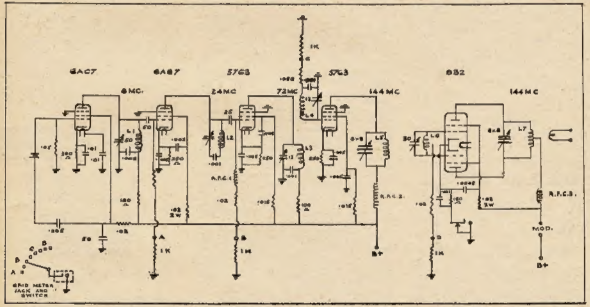
The chassis measurements are 17" x 8" x 3", which gives plenty of room. The plate coils of all the driving stages are mounted under the chassis, with their corresponding condenser shafts coming up through the chassis.

At the left of the chassis is the 6AC7 modified Pierce crystal oscillator. The 6AG7, tripling from 8 to 24 Mc., is mounted behind the 6AC7, and it drives the first 5763 to 72 Mc. The stages now proceed along the length of the chassis

The final stage plate coil and tuning condenser are mounted on a vertical bracket above the chassis, so that the flexible leads to the tube pins are quite short. The Eddystone 8 x 8 pF. butterfly condenser lends itself very well to this, as its bottom pair of terminals go to the tube pins via short lengths of metal braid or thin brass strip.

Do not try to solder direct to the tube pins—use Fahnstock clips or the brass inserts out of porcelain or bakelite two-way connectors.

The plate coil is soldered directly across the top pair of condenser terminals, and a link coupling coil meshed with the plate coil is supported by a polystyrene rod fastened to the top of the mounting bracket.



CIRCUITRY

The circuit consists of a 6AC7 modified Pierce crystal oscillator with 8 Mc. output from an 8 Mc. crystal, a 6AG7 tripler to 24 Mc., a 5763 tripler to 72 Mc., a 5763 doubler to 144 Mc., and as a final an 832.

Before condemning a five-tube lineup, the reader should take a look at the circuit of the SCR522[2] and note the calibre of the tubes the designer had to use to make up a reliable four-stage circuit.

It might be possible to do without the 6AC7 by using the 6AG7 as a tritet crystal oscillator with output on 24 Mc., but this was not attempted, as the tritet, although giving good output, can be hard on crystals.[3]

The 6AG7 was tried as a modified Pierce crystal oscillator for 24 Mc., but

to the right hand end. Note that cathode protective bias is used throughout. The 5763 tubes are easily damaged by excessive plate and screen current, so do not try to save components by leaving out the cathode bias—the Junior Op. might pull the crystal out!

The 832 sits in an R.C.A. socket type UT107, which is well worth using as it provides good shielding and has built-in screen and heater by-pass condensers. "Just to make sure," an extra screen by-pass condenser was connected across the socket, but it may not be necessary as the 832 has an internal screen by-pass condenser mounted inside the tube envelope.

If you do not use the R.C.A. socket, mount the 832 with the lower edges of the plates level with the chassis top, so that the grid pins are well shielded from the plate coil.

Using the UT107 socket, and with an antenna connected, the 832 was stable and had no tendency to "take off". However, if you should need to neutralise the final, you can use the usual "crossed over wire" method (see the A.R.R.L. Handbook).

METERING

A single-pole nine-position Yaxley switch connects a meter jack to read grid current for each of the last four stages for aid in tuning up.

A closed circuit jack in the cathode lead to the 832 enables current readings to be taken there and you could also use this jack to key the final stage for c.w. You can tune the final by cathode current dip in the usual way, but a far more sensitive method is to place a simple field strength meter a few yards away and tune for maximum

(Continued on Page 17)

* 11a Maud Street, Ormond, S.E.14, Vic.

SIMPLE SIDEBAND*

PARTS FIVE and SIX

LESTER EARNSHAW, ZL1AAX

THE ADJUSTMENT OF PHASING SHIFT EXCITERS

Though mainly concerning the two coil systems of obtaining the r.f. phase-shift, the following adjustments will be of equal value to those who use other systems providing you make allowances for the different means of obtaining the same end. The circuit of the two-coil system s.s.b. exciter is shown on page 4 of May 1959 "A.R.".

Because I have long been of the opinion that all stations, whether a.m. or s.s.b., should have an oscilloscope, I am only discussing tuning methods using this versatile instrument. In any case, in s.s.b., a 'scope is practically a must. To back up my above statement, most checks given to a.m. Hams by observer stations, are on modulation percentage.

In addition to a scope you will require a simple tone oscillator. It need not be elaborate, but it **must** be free from harmonics. Fig. 1 shows the circuit of an oscillator which will cost but a few shillings though most likely the "bits and pieces" will be already about the place.

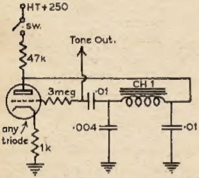


FIG. 1.

Fig. 1.—A suitable tone oscillator. CH1 may be the primary of an output transformer. The two condensers to ground at each side of CH1 may need different values to get the right frequency of tone.

An r.f. indicator consisting of a crystal diode and an r.f. choke will indicate the presence of carrier and will be an extremely useful gadget about the shack. A v.t.v.m. or field strength meter may be used instead if you wish.

Begin your adjustment by adjusting the wire wound 1k pot. in the cathodes of the 12AT7 to approximately the centre of its range. Turn the audio gain control down and apply all the normal voltages. Proceed in the following order:—

(1) Couple the link of your indicator to the oscillator coil L1 and adjust slug for maximum reading. Back off the slug a little on the **high** side to reduce crystal current. (Usual for crystal oscillators.) Rotate the two carrier pots., P2 and P3. If the oscillator stops, wind out the slug a little more until reliable oscillation is obtained at all times at any setting of P2 and P3.

(2) Couple the indicator L2 and adjust for maximum on meter. Check again that the oscillator is not pulled out of oscillation.

(3) Couple to L3 and adjust for maximum reading. It will be noted that the reading will be maximum when the two pots. are near the ends of their travel.

(4) Couple the indicator to each of the tuned circuits in the following amplifier stages and adjust for maximum output.

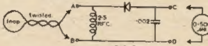


FIG. 2

Fig. 2.—By connecting the loop to A and B and a meter to C and D this instrument will indicate the presence of carrier. Connect an unknown a.c. source to A and B and you will get a comparative reading. Connect an antenna to A and you have a field strength indicator. Connect phones to C and D and you have a broadband crystal set.

(5) Leaving the indicator coupled to output stage, wind out carrier using first one balance control, then the other. Return again to the first control, then back to the second. Continued adjustment should **completely** eliminate the carrier. A receiver, when tuned to the frequency, will of course show the presence of signal. This will be received directly from the crystal oscillator. I mention at this stage that failure to balance out the carrier may be due to a number of causes. Usually it is either due to self oscillation in the amplifiers or alternatively inadvertent coupling between L1 and L2 and some of the later tuned circuits.

(6) Remove the crystal oscillator tube. Couple the tone oscillator to the top of the audio gain control. The frequency of the tone must be adjusted to around 1000 cycles to 1250 cycles, dependent on the demands of the audio phaseshift network used. Couple the horizontal and vertical plates either to the plates of the double triode following the phaseshift network or to the "hot" end of the secondary windings of T2 and T3. Adjust the pot. P1 until you get a circle on the scope. Get this picture as near a circle as possible. Mark this potentiometer setting.

(7) Couple the scope to the r.f. amplifier stage; use the internal time base (50 cycles a.c. may be used if you make allowances for the non-linearity of the sweep and consequent squeezed-up picture at the ends of the trace).

(8) Adjust the slug of L2 to minimise ripple along the top and bottom of the pattern. Before adjustment, the picture may have looked like Fig. 3. Fig. 4 shows a partly adjusted exciter. The object is to get as little ripple as possible. After each adjustment of the L2 slug you must switch off the tone and balance out the carrier again. You will note that every other depression in the ripple is due to the presence of carrier.

(9) Switch to the other sideband by reversing the two leads from either T2 or T3. The ripple may appear larger now. Again adjust the slug L2. Try and get the ripple even on each sideband.

(10) Touch up the adjustment of P1 to minimise the ripple. Switch sidebands and touch up the slug L2. Switch sidebands again and touch up P1. Keep doing this until you wear the ripple down. You will find that there is an in-between setting of the two controls which will give minimum ripple.

(11) Adjust the 1k pot. in the cathodes of the 12AT7 for minimum ripple. Go back over the previous measurements. The final picture should look like Fig. 5.

It is important that you do not favour one sideband. You will be favouring that sideband for one frequency only—the frequency of the tone. Here are a few points which may help out if you strike trouble:—

If you use the more common type of network available, such as the B. & W., etc., you must deliberately apply unequal audio input to get equal output. Pins 3 and 7 of the B. & W. type network require 2/7ths of the voltage input. Pins 1 and 5 receive the other 5/7ths of course. This you do with P1.

FIG. 3.

FIG. 4.

Fig. 3.—Carrier and unwanted sideband present.

Fig. 4.—Carrier suppressed. Unwanted sideband present.

FIG. 5.

Fig. 5.—Carrier and sideband suppressed.

The two coils L1 and L2 must have the correct spacing. Although diode balanced modulators do not seem to be fussy about balanced amplitude of the two r.f. inputs, it is absolutely imperative that the phase relationship be

* Reprinted from "Break-In," Sept., Oct., 1958.

correct Therefore, if you use coils different in diameter from those I have suggested, you may have to play about with spacing.

Distortion in the audio amplifiers will cause ripple to appear on the pattern and you may worsen the sideband suppression in an effort to get rid of the ripple from the trace. The same applies if the tone is not a pure sine-wave. **Harmonic distortion gives ripple indistinguishable from that caused by poor sideband suppression.**

The balanced modulator output circuit must be tuned with equal condensers. When one balanced modulator tube is removed, you should be able to balance out the carrier with the other working potentiometer.

Though the adjustment of the phasing type exciter sounds complicated, it really is simple once you have done it a couple of times. I well remember my Grandma, when using the phone for the first time and having been told to ask for Central when she rang, said, "Hello! Is that the middle?" Now of course she uses the phone as though she was born to it. The moral is: Go over the operation a few times and you will discover little points and short cuts I am not able to tell you here. And you will build up a familiarity with the equipment. This will also prove quite conclusively, that sideband really is simple.

Fig. 6.—Ratio A—B.

1 : 5	14 db.	1 : 30	30 db.
1 : 10	20 db.	1 : 50	34 db.
1 : 15	24 db.	1 : 100	40 db.
1 : 20	26 db.		

THE ZL LINEAR

When I began this series, I expressed a desire to live up to the name I gave it—Simple Sideband. Although this has not always been easy because, naturally, certain portions of any form of transmission are difficult to define in simple terms, this time, in this particular article, I trust I will have hit the jack-potpot in simplicity

Most generators of r.f. for transmission purposes require amplifiers of one form or other. For c.w. or high level a.m. this is no problem because almost any old amplifier tube connected up in almost any old manner will amplify a carrier. (The proof of this is the many c.w. and a.m. Amateur Stations in operation at the moment!) What matters if the loading is light or the grid drive is incorrect?, the tube working on the wrong part of the curve? What matter distortion of the r.f. wave-form? So long as you are modulating the signal **after** it has been amplified it doesn't matter a scrap But amplify an already modulated sginal with any old amplifier operating under near-enough conditions and boy oh boy, are you going to have an argument with your brother Amateurs!

An audio amplifier is a linear amplifier—or should be—and within certain limitations most audio tubes will amplify s.s.b. Mostly the limits are those imposed by frequency. So long as the audio tube is capable of operation at the higher r.f. frequency and is neutralised when the tube capacities would normally cause oscillation, you should be able to pinch the a.m. amplifiers from what will be your unwanted a.m. modulator and use them to put your s.s.b. on the map in a big way. If you should be using zero bias 807 modulators for example, there is no logical reason why you should not be able to use the same set-up to amplify s.s.b. Merely substitute tuned circuits for the transformers and pick up the QSL cards as they come rolling in.

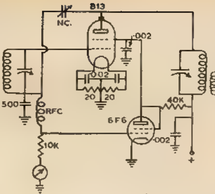


Fig. 7.—ZL Linear Amplifier.

One major difference between an amplifier that amplifies s.s.b. and one that amplifies audio, when the operation is other than Class A, is that in the latter case one **must** use push-pull tubes. But when amplifying s.s.b. signals in Class AB1, AB2 or Class B, one tube is sufficient. This comes about due to the flywheel action of the plate tank circuit which puts back the missing half of the cycle in exactly the same way as does a Class C stage.

Remember this, treat your s.s.b. signal like audio, operate your tubes as you would if they were operating in your pet Hi-Fi amplifier and you'll get a lot of fun out of this exciting form of transmission.

But before I begin the story of the ZL Linear, you must have a scope to correctly set up for linear operation. Variable factors such as antenna loading make this an absolute necessity. If you are not loading the little old final the way it should be loaded; if you over-drive it; if you are using incorrect operating conditions—you have splatter.

To the best of my knowledge, the ZL Linear has not before appeared in print, though before long it is to appear in an American Sideband Manual. It is quite original only because no one else was damn-fool enough to try what I tried when first I discovered it. (I'm not going to discuss this point further!) But first I warn you that this amplifier does everything that the good book says you must not do. Linear amplifiers must have regulated bias supplies for example. They must also have regulated screen supplies. The ZL Linear has neither! In fact it has varying grid and screen voltages! It is quite simply a Class C type of final with clamp tube screen voltage control. Fig. 7 shows the circuit and you will recognise it as being the conventional c.w., a.m. amplifier. Several now have had a shot at explaining the operation of this linear and one or two have come up with ideas even more fantastic than the amplifier itself. My own ideas (which may well be incorrect) are as follows:

No signal: Clamp tube resistance is low and holds down screen voltage which in turn keeps the plate current at a low figure. The actual figure is dependant on the type of clamp tube.

With signal: Grid current with signal causes a voltage drop across the grid leak. This means that the final is developing its own negative bias and the amplitude of the bias varies in accordance with the signal producing it. This bias is also applied to the grid of the clamp tube which allows the clamp tube

to unclamp, the screen voltage to rise, and the plate current to rise and accommodate the signal.

Reviewing the situation a signal applied to the grid allows the screen voltage to rise and this of course allows the plate current to rise. So we have a state which is purely automatic and the clamp tube is really operating as a gating valve.

There are one or two superior points about this method of operation which I think will appeal to many:

(1) May be used for a.m. **without alteration** to the circuitry. Just feed your r.f. into the grid and modulate in the normal manner. Don't forget this is actually an a.m. amplifier.

(2) Requires no bias supply.

(3) Requires no screen supply other than a simple dropping resistor.

(4) Practically no adjustment required unless you are pioneering a new tube type.

(5) Is the most easily adjusted and the most tolerant to mis-adjustment of any amplifier I have ever known.

Disadvantages (and it has one major disadvantage): In the event of the clamp tube failing, more than likely you will also be buying a final tube as well. This may be overcome in two ways, one by using two clamp tubes in parallel; or two, by using an overload cutout in the final plate supply.

Here are one or two conditions: The clamp tube must not clamp too heavily. It must allow the screen voltage to rise the **moment** signal is applied to the grid. This is quite important. I found that with most final tubes the 6Y6 was too severe in its clamping action and would not allow the screen voltage to rise until after considerable signal had arrived at the grid. This, of course, gives distortion at lower levels.

Here is data on operation of the 813 as a ZL Linear:

Plate voltage, 1,000 volts.
Grid leak, 10,000 ohms.
Screen resistor, 40,000 ohms.
Clamp tube, 6F6, 12A6.
Standing plate current, 40 to 50 mA.
With 3 mA. of grid current, with carrier wound in, or on tone modulation: plate current 120 to 150 mA [1]

On voice modulation plate current rises to approximately 100 mA. Different 813s have given values considerably different from these figures. Different clamp tubes will give different standing plate currents. The larger the standing plate current, although the power wastage in heat is higher, the better the linearity because the less the plate impedance of the final varies.

Values of grid and plate tuning condensers do not seem to be quite as critical as Class AB2 or Class B operation but in any case one cannot go wrong in using the Class B values. I use the following values which were worked out from the good book:

Plate tuning condenser.

80 mx:	240 pF.	in	circuit	capacity.
40 „	120 „	„	„	„
20 „	60 „	„	„	„
15 „	45 „	„	„	„
10 „	30 „	„	„	„

Grid tuning circuit:
Values same as above.

In order to use a 6Y6 clamp tube and to adjust the clamp action accurately, Ron ZL1ARH and Cliff. ZL2AHV both came up with the suggestion that by placing a potentiometer across the grid leak the clamp bias could be adjusted separately.

Although I have not applied this system to other tubes (other than a 6146), various stations on both 80 and 20 metres are using the system on 4-125As, 807s, and 1625s. Don Stoner, W6TNS, is at the moment playing with the system applied to a kilowatt final.

I mention, before shutting up shop, that there seems to be many who would have it that the system doesn't work, that it splatters, that it shouldn't be on the air, etc., etc., but a Collins 75A4 just three miles away from this QTH gives an excellent bill of health. Further, two tones, a 1400 cycle and a 600 cycle, when fed into the exciter, show the following outputs: 1400 cycles, 600 cycles, 2000 cycles, 800 cycles, and away down, at approximately 30 db., the harmonic products! All of which means that the amplifier is "clean". Scope patterns are of course excellent. Like all amplifiers, it will of course overload, it must be correctly loaded (which means heavily), but otherwise it is about the easiest-to-get-going linear amplifier I have ever used.

In conclusion, I give a list of stations who have adapted the ZL Linear to suit tubes other than those used here. I am quite sure that these stations will be found ever-ready to give out data concerning the particular tube types they use.

ZL2AHV—813.
ZL3BG—4-125A.
ZL2AVA—807s in parallel.
ZL1ARH—One of the double tetrode series with a QQE number, but very similar to an 829.
ZL1ND—KT88.

The 6146 I have found to be unsuccessful in this set-up. It appears that the screen does not exercise sufficient control of the plate current.

My thanks to those who have, over the last year, assisted in pioneering the ZL Linear, even though they often were not easily convinced that it would work. My thanks especially to John ZL2AG, who was the second station sufficiently daring to use the principle (to a 4-125A), and to ZL2AHV for the many tests he has himself conducted with it.

Next month I hope to discuss voice control and also show the system in operation at this station.

— • • • —

[1] These plate current figures occur on tone modulation or with carrier wound in. Normal speech peaks then cause plate current to rise to approximately 100 mA.

"CQ" DX CONTEST RESULTS

AUSTRALIA

C.W.—Single Operator

Call Sign	Band	Score	QSO	Zon.	Cnts.
VK2GW	All	354,172	627	76	120
VK2PV	All	54,752	175	48	68
VK2AKF	All	17,020	156	21	16
VK2APK	14	31,659	189	23	38
VK2OW	14	741	13	9	10
VK2CX	14	19,836	102	21	36
VK3XB	7	9,604	120	14	14
VK4BG	21	23,580	132	23	37
VK4XW	7	3,179	64	9	8
VK5NO	All	217,308	420	75	107
VK5JT	21	2,709	44	12	9
VK5MY	14	22,320	113	23	49
VK6RU	All	476,720	700	85	151
VK7UW	All	119,500	347	53	72
VK7JB	All	30,537	133	34	47
VK7KA	21	10,764	69	24	28

Phone—Single Operator

Call Sign	Band	Score	QSO	Zon.	Cnts.
VK2AKF	All	28,126	131	36	46
VK3HL	All	11,840	68	30	34
VK3MX	21	540	10	8	10
VK4BG	21	6,148	48	18	20
VK5AB	21	46,560	173	31	66
VK6RU	All	131,026	243	75	116
VK6CL	21	14,625	77	22	43
VK7WA	All	21,175	103	33	44
VK7LZ	All	16,985	61	35	44
VK7SM	14	5,006	55	17	19

Conversion of the SCR522 Transmitter to 5 Metres

R. L. LEAR,* VK2ASZ

WITH the conclusion of the I.G.Y. close at hand and thence the close of the 6 metre band to our use, thoughts of many Amateurs will turn to greater use of the old 5 metre band as well as 2 metres, for local communication and for use in W.I.C.E.N.

Many chaps with 6 metre equipment will find no difficulty in converting that equipment to use on 5 metres, but this article is directed to those who have SCR522 equipment lying around as a result of the large issue of this equipment by the W.I.A. Circuits are available from Reg. Brooks, of Gosford, so that no trouble should be experienced by anyone in sorting out the mysterious innards.

First move in the conversion is to firmly grasp a pair of side cutters in your hand and snip out all the wires going to the relays at the audio end of the chassis. The relays can be removed and placed carefully aside. All the side tone circuitry may be removed if it is desired to use the modulator as it stands with a carbon microphone. However, I feel that the quality of modulation is not good enough to meet the standards of the usual run of Amateur Stations and a better idea is to use the good quality audio transformers in the 522 and construct a separate modulator using a good shielded enclosure and a good quality crystal insert. The difference is worth the trouble.

With the transmitter, mechanical changes to be carried out are as follows. The aerial plug is removed and two co-axial sockets are inserted in its place. This is to carry the aerial lead-in and the lead to the receiver used. One of the relays is mounted on the side wall away from the oscillator tube and acts as aerial change-over relay. A word of warning here. Check the relay contacts first as some of the relays are of the self-shorting type and have an internal connection to the frame of the relay.

The crystal sockets in the front of the transmitter are out of circuit until the relevant slide is in, thus closing the relevant switch contacts on the transmitter front. Easiest way here is to drill a small hole in the slide bracket near the left hand edge and then pushing in the first slide, and drilling a matching hole in the slide itself. A small screw will then hold the slide in place so that the first crystal socket is in circuit and able to be used.

An 0-1 ma. meter is installed on the front panel and connected at the back to the meter switch plug. All existing shunts in the set are adjusted for an 0-1 ma. movement.

WIRING CHANGES

(1) Rewire heaters if it is required to use 6 volt tubes.

(2) Shunt a 250 pF. condenser across the oscillator anode tuned circuit. (Note. This was to suit the 6450 crystal used here and will need to be varied to suit the crystal used in your station.)

(3) Remove coil from 12A6 anode circuit and replace with a 20-turn centre-tapped coil. (22 s.w.g. on ½ inch diam. air wound.)

(4) Remove Ohmite ZO RFC's from grids of the 832 2nd harmonic amplifier (Also remove note K if fitted. This is a capacitor from bottom side of coil to earth.)

(5) Remove 25K resistors from junction of 150v. bias line and bottom of chokes.

(6) Add two 15K or 20K resistors from 832 grids to bias line point.

(7) Remove Lecher lines from 832 2nd harmonic amplifier anodes.

(8) Unscrew c.t. position of lines and remove completely, then lift back shielded B+ line to 832 temporarily out of the way.

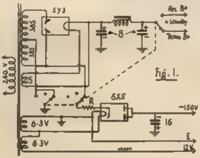


Fig. 1.—"R" is adjustable to give —150 volts from plates of 6X5 (approx. 10K ohms needed.)

(9) Connect the two 20 pF. grid coupling condensers from grids of final 832 to the stator plates of 1st 832 anode split-stator condenser.

(10) Wire coil of 11 turns (22 s.w.g. on ½ inch diam. air wound) across the condenser and fold down between anode pins of tube. Connect folded back, shielded B+ lead to centre-tap of this coil.

(11) Remove final tank coil and substitute a 12-turn coil (20 s.w.g. on ½ inch diam.) air wound with a gap in the centre of ½ inch for coupling loop, already there.

(12) Put the g.d.o. over all tuned circuits and ensure that they will cover the required band. In my case, with a 6450 crystal, the line-up was 6G6 6450, 12A6 19.350 mc., 1st 832 58.030 mc., and 2nd 832 as straight out final on 58.030 mc.

POWER AND BIAS NEEDS

At this stage a short discussion on the power and bias requirements of the transmitter would be in order. In its original form the transmitter used a genemotor supplying 300 volts h.t. and minus 150 volts for bias. This is the easiest method to use. By making up a normal 385 aside power supply and using a separate rectifier off the same transformer to supply the requisite —150 volts. This is shown in the circuit of Fig. 1.

You will note that a separate switch section is used to cut the bias lead from the secondary of the transformer. This is essential and if it is not done, when the switch is put to the standby or receive position, a positive voltage of 150 volts appears at the output of the B+ point, even though the transformer centre-tap is open-circuit from ground. This allows the transmitter oscillator to work and creates a signal in your receiver on your own frequency which is most annoying.

For the diehards, however, who insist on using battery bias, you will see that the —150 volts is applied across a divider network consisting of R147 (1.8K) and R146 (8K) to feed the transmitter, and R152-3 and R152-4 (50K) and R145 (15K) to feed the modulator. A little maths. here will show that this provides approximately 20 volts negative to the modulator grids and approximately 37.5 volts negative to the transmitter bias line. If the resistors 152-3, 152-4, and 145 are removed and the two wires swung over as shown in Fig. 2, then by applying a battery voltage of —30 volts to the old —150 volt lead, these voltage requirements will be met.

The power requirements are as follows:—

Pin 1	—150 volts
Pin 2	+12 „
Pin 3	+300 „
Pin 8	earth

The lead from pin 4 was transferred to a pin left vacant by the removal of the sidetone wiring and then 300 volts was fed to pin 4 from pin 3 and a lead run inside the transmitter up to the aerial change-over relay, through it and back to the transferred pin. This means that when the h.t. is applied to the transmitter the 300 volts flows through the relay coil and the drain from the pin 4 connection is just enough to give a 12 volt drop across the relay and pull it in smartly.

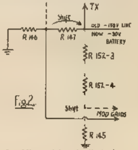


Fig. 2.—Alter wiring to that shown in solid lines.

TUNING UP

Tuning the transmitter is quite simple. With the switch on position 1 (50 ma. full scale), tune 1st left hand control to maximum. The 2nd control can be tuned for a dip on this position or on pos. 2 for maximum (100 ma. full scale). Position 3 (100 ma. full scale)

(Continued on Page 13)

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TECHNICAL TOPICS

BY PAT HAWKER (G3VA)*

CHOOSING CONDENSERS

PROBABLY as many fixed condensers are used in Amateur Radio equipment as all other components put together. And yet, all too often, we just search around in the junk box for the right number of "muffs" or "puffs", hope the rather dirty object we discover will stand the voltage, and reach for the soldering iron . . . and then wonder why results do not always match up with expectations.

Recently, there have been several useful articles on choosing condensers for particular applications (especially W1ZEO/2 on the right types for an s.s.b. exciter in "QST", July 1958, and W5DF in "CQ", August 1948, on negative temperature coefficient condensers) while a good deal of information for designers appears in the standard reference books. Although a full scale attack on this subject would take more space than can be spared for "Technical Topics", it is felt that the following notes may at least indicate to newcomers some of the complexities involved.

Not so many years ago, condensers fell conveniently into three main categories: paper condensers for a.f. work; mica condensers for r.f. circuits; and electrolytics for smoothing. Today, there are dozens of different types, each with its own particular merits, and disregard of a designer's specification may jeopardise results and reliability.

For example, waxed cardboard paper tubulars are still widely used, but should be avoided for any position where a high insulation resistance is essential. After a few years' use—and much less than this in the tropics—their d.c. resistance may easily amount to only about 5 megohms. For many purposes this does not matter much, but, for instance, if used for inter-valve coupling, may easily result in a positive bias being applied to the following valve; avoid them also for decoupling a.g.c. lines.

To reduce leakage there have been introduced many new types of containers which maintain an insulation resistance of some hundreds of megohms even at quite high temperatures (the effect of high ambient temperatures on the life expectancy of some type of condensers can be alarming.)

Then again, the type of voltage applied across a paper condenser affects considerably the ratings required. It is sometimes forgotten that high a.c. voltage peaks may occur in quite low power a.f. stages, and any condensers subjected to these voltages must be rated to withstand the peaks, plus any direct voltage which may be across them. Condensers subjected to continuous a.c. stress—for example chassis, aerial and earth isolating condensers in a.c./d.c. equipment, and those for the suppression of interference in motors, etc.—should always be rated specifically for a.c. working (roughly speaking an a.c. working of 300 volts is about equivalent to a 1,000 volt d.c. rating). For such condensers, petroleum jelly or liquid impregnants are much better than wax. Special types of condensers have been developed for electrical interference suppression, and the use of conventional types for this purpose may prove highly dangerous, as their failure can result in the outer casings of domestic appliances becoming "live".

Moulded mica condensers are still widely used for r.f. purposes, although the smaller size of the silvered mica types has made these very popular. As the power factor of either type of good quality mica condenser is low, they can handle quite high transmitter currents. Silver mica types are very stable over long periods and should therefore be used for tracking and padding in tuned circuits.

Ceramic condensers have taken over many of the tasks formerly allotted to mica condensers, except where a very high order of stability is necessary. The so-called high-permittivity (high-k) types are useful and economical for most r.f./i.f. decoupling, and similar purposes. In the low-permittivity class, deliberate use can be made of their sensitivity to temperature variation to provide compensation for changes which would otherwise occur in tuning circuits during warming up. There are few modern television and f.m. tuners which do not make use of this characteristic to keep frequency drift within permissible limits (admittedly, these tend to be wide by communications standards), and correct use of such condensers can greatly reduce drift in receivers and v.f.o's. Incidentally, even professional designers tend to determine the type of drift correction condenser required in a circuit largely by "try it and see" work on prototypes, so the Amateur need not be discouraged. By using one of the N750 (i.e. 750 part/million/degree Centigrade) types the value of this condenser can usually be kept a small proportion of the total capacity across the tuned circuit. With some ceramic condensers, excessive heat from a soldering iron can cause permanent damage.

Electrolytics have improved beyond all recognition over the years; a remarkable number of "muffs" can now be contained in a very small space, and will continue to stay there happily for many years (it is not so long since a respectable explosion in a broadcast receiver at G3VA sent the contents of an electrolytic far and wide). At least one broadcast receiver has 116 μF. of smoothing and 300μF. is a common figure for television sets; a transistor receiver may have 200 μF. across the battery. But even today it is worth remembering that the shelf or junk box life of an electrolytic is much less than when in regular service. After some months out of use, the insulation resistance fails sharply, and the condenser then requires re-forming (or re-ageing as it is often called) before putting into use. Otherwise, there may easily be a blown condenser and, more likely than not, a dead rectifier valve. The usual method of re-forming a condenser is to apply the normal d.c. working voltage through a limiting 10K ohms resistor until the leakage current falls to a low figure.

Looking over these notes, it is realised that such important points as series inductance, tolerances, ripple currents, and the like, have had to be omitted; but at least we may have shown that there is more than just a couple of lines on a diagram to the modern fixed condenser, and that we can no longer ignore specified types with impunity

* Reprinted from R.S.G.B. "Bulletin," Nov. '58.

CONVERSION OF SCR522 TX

(Continued from Page 11)

should be tuned for maximum on 3rd control and then for dip on 4th control. Check on position 5 that these last two controls give maximum reading (2 ma. full scale) of grid drive and it is quite normal to send the meter hard over off the scale which will do no harm.

If an r.f. indicator is fitted to the transmitter in the final enclosure, then position 4 (1 ma. full scale) will enable all controls to be peaked for maximum r.f. output.

A simple half wave dipole directly fed with 50 ohm co-ax. has given quite good results from here, but a good 5 metre 5 element beam should produce quite startling results.

A few tips on the transmitter would not go amiss here. The drain on the bias battery in the system shown is about 0.5 ma. and it would be a good idea to install a switch to cut it when not in use.

In the original transmitter, modulation is applied to the first 832 screens as well as to the final. The quality can be improved by removing this modulation and this is done by removing the yellow lead from the junction of the two 40K resistors near the final 832 under the chassis and connecting it to pin 2 of the modulation transformer or to the unmodulated h.t. on pin 3 of the power plug. Leave the blue wire in place as it supplies modulation to the final 832 screens.

Many of the points in this article will be of use to anyone who is converting the transmitter for 2 metre operation also and it is very easy to arrange to have two of the transmitters going on 2 and 5 metres, both operating off a common modulator as is the case at this QTH.

I wish to thank Wal VK2MZ for the great assistance he has rendered in this conversion and it was he who did most of the hard work involved in it.

See you on Five, chaps!

3.5 Mc. BAND CONTEST BY VK9

The Contest is being organised by the Council of the Papua and New Guinea Division of the W.I.A. as an effort to encourage the use of the sparsely occupied 3.5 Mc. band. No prizes are being offered for this Contest, but QSL cards will be sent by those stations contacted. As QSLs from Papua and New Guinea on 3.5 Mc. are scarce at present, it is hoped that many Amateurs will take this opportunity to acquire one of these cards.

The Contest will be run from 1st to 31st July, 1959, and will be for either phone or c.w. or both. Only one contact per station (either phone or c.w.) per day will be permitted.

DRIFT TRANSISTORS

A NEW CONCEPT IN DESIGN FOR HIGH-FREQUENCY APPLICATIONS

NOW COMMERCIALLY AVAILABLE FOR HIGH-FREQUENCY APPLICATIONS IN INDUSTRIAL AND ENTERTAINMENT APPLICATIONS. YOUR BEST CHOICE FOR HF TO VHF.

ABOUT THE NAME DRIFT

The word DRIFT is a well-known term in physics used to describe the motion of charged particles in ionized gases under the influence of an impressed electric field. Charged particles move much faster in a given direction by "drifting" in an electric field than they can by random diffusion in the absence of an electric field. In keeping with the analogy between the drift phenomena in gaseous discharges and in semiconductors, the word *'Drift'* is applied to transistors which incorporate a "built-in" accelerating field.

The electric field in drift transistors, which literally propels the charge carriers from emitter to the collector, is achieved by the graded distribution of an impurity in the germanium base region. This "built-in" accelerating field, a feature not available in conventional transistor designs, results in greatly decreased transit time and therefore a much higher upper frequency limit.

Cross-sectional view of the drift-transistor structure.

THE DRIFT PRINCIPLE

The successful use of the drift field principle lies in the critically accurate control of impurity distribution in the base region during manufacture. The density of the impurity distribution in the base decreases exponentially from very high values at the emitter to low values at the collector. The impurity distribution introduces a constant electric drift field which accelerates (propels) the charge carriers through the base region. Compared with the performance of conventional transistors, in which the charge carriers move by means of diffusion—a comparatively slow process because of its random nature — the acceleration of charge carriers by the drift field represents a major improvement. Because of the accelerating field in drift transistors, the transit time of the charge carriers is substantially less than the transit time of the carriers in a conventional transistor. This results in greatly increased high frequency performance.

"DRIFT" TRANSISTORS PROVIDE SUPERIOR PERFORMANCE

The high impurity density in the base near the emitter results in a *low base resistance*, while the low impurity density near the collector contributes to *low collector capacitance* and results in a high collector breakdown voltage. The extremely low value collector capacitance makes neutralization unnecessary in most applications and permits the design of simple and economical circuits.

SHIELDING MINIMIZES INTERLEAD CAPACITANCE

The combination of low base resistance, high collector breakdown voltage, low collector capacitances, and short transit time, makes possible the design of high-power gain, high-frequency circuits with excellent operating stability and good automatic-gain control capabilities over a wide range of input signal levels.

The drift transistors described here have four flexible leads and are hermetically sealed in metal cases. The fourth lead is connected to the case internally to minimize interlead capacitance and reduce coupling to adjacent circuit components. These important design features contribute to the usefulness of drift transistors in high-frequency circuits, particularly in those industrial and commercial applications where low feedback capacitance is an important design consideration.

DRIFT TRANSISTOR DATA CHART

TYPE	CLASS OF SERVICE	MAXIMUM OSCILLATOR FREQUENCY	TYPE	CLASS OF SERVICE	MAXIMUM OSCILLATOR FREQUENCY
2N247	RF Amplifier	132 Mc.	2N544	RF Amplifier	132 Mc.
2N274	RF Amplifier	132 Mc.	2N640	Automobile RF Amplifier	132 Mc.
2N370	RF Amplifier	132 Mc.	2N641	Automobile IF Amplifier	132 Mc.
2N371	RF Oscillator	132 Mc.	2N642	Automobile Converter	132 Mc.
2N372	RF Mixer	132 Mc.	2N643	High Speed Switch 20 Mc.	—
2N373	IF Amplifier	132 Mc.	2N644	High Speed Switch 40 Mc.	—
2N374	Converter	132 Mc.	2N645	High Speed Switch 60 Mc.	—
2N384	VHF Amplifier	250 Mc.			

FEATURES OF DRIFT TRANSISTORS IN HIGH-FREQUENCY APPLICATIONS

- low base resistance
- high output resistance for increased gain
- low feedback capacitance
- high alpha-cutoff frequency
- controlled input and output characteristics
- controlled power gain characteristics to insure unit-to-unit interchangeability
- rugged mechanical construction
- excellent stability
- exceptional uniformity of characteristics

DESIGN BENEFITS INCLUDE:

- high input-circuit efficiency
- excellent high-frequency operating stability
- good signal-to-noise ratio
- good automatic-gain-control capabilities over a wide range of input-signal levels

These drift transistors *are germanium p-n-p alloy-junction types which are specifically designed and controlled for operation in mass-produced electronic equipment operating at frequencies up into the vhf band.*

2N247 2N370 2N371 2N372 2N373 2N374 2N544 2N640 2N641 2N642 2N643 2N644 2N645

2N274

2N384

AMALGAMATED WIRELESS VALVE CO. PTY. LTD.

47 YORK ST. SYDNEY

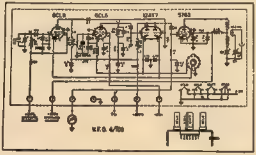
GELOSO V.H.F. V.F.O.

The last few years has seen such an enormous increase in the activity on the v.h.f. bands of six metres and two metres that a v.f.o is a necessity for the up-to-date station that expects to be in the running during the DX openings. Even for local contacts the v.f.o. will be found very useful during round table conferences or to locate yourself in a clear spot in the band when local activity is running high

The Geloso Signal Shifter No. 4/103 will provide a neat and compact exciter unit which will cover the full two metre band (144 to 148 Mc.) with switching facilities to change to crystal control if desired. The unit will provide adequate drive to run an 832 or a 2E26 to their full ratings provided the h.t. supply does not fall below 270 volts. A power supply rated at 300 volts 80 mA. and 6.3 volts at 2.35 amps. is recommended.

An examination of the circuit in Fig. 1 will show that the 5763 is common to both crystal and v.f.o. circuits, but with either arrangement only one 6CL6 and one half of the 12AT7 is in operation at any time.

Firstly, considering the exciter with the v.f.o. The first 6CL6 consists of an oscillator doubler operating on a fundamental frequency in the 18 Mc. region and having a 210 volt regulated screen supply. The output is doubled in the plate circuit of this tube to 36 Mc.



The 36 Mc. output is capacitively coupled to one half of the 12AT7 which operates as a further doubler with a 300 volt plate supply and provides a 72 Mc. output.

The output from the 12AT7 is then capacitively coupled to the 5763 which operates into a series resonant plate circuit at 144 Mc.

With the switch in the crystal control position, the cathodes of the 6CL6 and the half of the 12AT7 previously used, are opened, and the remaining 6CL6 and the other half of the 12AT7 are brought into operation

Although a 12 Mc. crystal is specified for the oscillator doubler, the more common 8 Mc. crystal may be substituted and the stage operated as a tripler without any further alterations or adjustments

The 24 Mc. output from this 6CL6 oscillator doubler stage is capacitively coupled to half of the 12AT7 which is operated as a tripler with an output on 72 Mc. This 72 Mc. output is then capacitively coupled to the 5763 which operates as a doubler to 144 Mc. as before.

Facilities are provided on terminal 4 of the terminal strip to measure the drive to the 5763 doubler

A series tuned link is provided to couple the output to the co-axial socket mounted on the rear of the chassis. Also a socket is provided at the rear of the chassis for a balanced output if desired

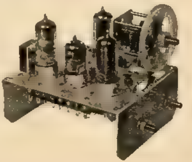
The usual quite large and handsome Geloso dial is provided to enhance the appearance of the unit. The scale, graduated from 144 Mc. to 148 Mc., is 8 inches long, it is however not linear; at the 144 Mc. end of the band ¼ inch represents 100 Kc., whereas at the 148 Mc. end of the band 3/16 inch represents 100 Kc. This of course is taken care of in the graduations. An outer linear scale in red is graduated 0-100.

The chassis is very lightly constructed and unless care is taken to mount it rigidly on a solid main chassis, trouble will be experienced with vibration effecting the frequency when v.f.o. controlled. Mechanical rigidity is important with v.f.o's. having a fundamental frequency as high as 18 Mc.

The 5763 doubler may be supplied with modulated h t. and the exciter may then be used as a complete low power transmitter.

The unit upholds the tradition that the Geloso people have established in providing equipment of a satisfactory standard at a reasonable price. The exciter will enable the Amateur to build a transmitter for two metres that can operate with v.f.o. or crystal control at the flick of a switch and having an appearance which should even appeal to the XYL.

We are indebted to R. H. Cunningham Pty. Ltd. for making one of these units available for test.



SILENT KEY

It is with deep regret that we record the passing of:—

VK3HT—D. G. Britt.

VK3ZBD—W. I. Dawson.

WIRELESS SETS NO. 22 AND NO. 122

(Continued from Page 3)

(use writing paper only, **not emery**), clean all contacts associated with the rotary inductance, carry out modifications 1a, 1b and 1c, plus 2a and 2b if necessary. Then you will have performance equal to the best of them.

Remove all traces of oxidation from the rotary coil and wheel. Slacken the screws which hold the leaf springs and increase their tension. This causes the wheel to press more firmly on the coil.

MECHANICAL CONSIDERATIONS

If you want to experiment further, these mechanical considerations are given as a guide.

Ease of control and finer tuning can be obtained by the following method. Remove the small knob from the frequency control and replace with one of larger diameter. This provides easier and smoother control. An alternative is to remove the knob and fit a small planetary type reduction with a suitable pointer and scale. There are several screws adjacent on the panel for mounting. This gives very fine adjustment and lots of bandspread on the scale which can be accurately calibrated. The one in use was calibrated against a 100 Kc. oscillator and 10 Kc. multivibrator. The scale is so open, it is easy to interpolate the 5 Kc. points.

Antenna terminal can be replaced with a co-axial connector.

It has been suggested that the r.f. metering transformer absorbs useful power. It is not of any great use in tuning as most Amateurs rely on p.a. plate current readings.

The r.f. metering transformer is easily shorted out by a piece of heavy gauge tinned copper wire soldered between the lead to the contact on the rear end of the rotary inductance and the transformer. This is easier, quicker and much less messy than attempting to remove the transformer.

The modifications, both electrical and physical, which can be applied to these ubiquitous little sets are limited only by the imagination, time and tenacity of purpose of the operator. It has been the object of the Committee to sift, test and present in a brief form, the main ideas for quick and easy results, bearing in mind the old saying, "You can't make a silk purse from a sow's ear."

In conclusion, here is one final thought. For those who are interested in emergency networks where it is advisable to keep equipment at least outwardly standard, the removal of drop cords could be opposed. In emergency work it is advisable for equipment to be interchangeable and the use of a multiplicity of plugs and sockets could prevent the use of equipment in certain circumstances.

This list of modifications has been made possible through the interest and co-operation of the following Amateurs: VKs 2OU, 2ACB, 2AEE, 2ASF, 3CN, 3OH, 3OM, 3PE, 3PZ, 3RN, 3UW, 3ZX, 3AAK, 3AHN, 3AIJ, 3ZCB, 5EM, 5KH, 7JB, 7TT.

HINTS AND KINKS

TRANSISTORISED B.F.O. FOR MOBILE USE

The schematic of a compact transistorised b.f.o. for mobile use is shown in Fig. 1. The circuit is a variation of that appearing in several issues of "QST," but the method of obtaining power for the unit is somewhat unique. Although an inexpensive type CK722 transistor is used, the oscillator is adequately stable for use in converting an automobile broadcast receiver for c.w. reception. The b.f.o. may be constructed for use with receivers having either a 262 or a 455 Kc. i.f.

When first used, the b.f.o. circuit was installed to take d.c. input power from the hot filament lead in the auto radio.

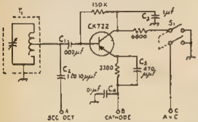
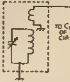


Fig. 1.—Circuit diagram of the transistorised b.f.o. unit. Resistances are in ohms; resistors are ½ watt. T1 is a 262 Kc. or 455 Kc. b.f.o. transformer (see text). S1, a d.p.s.t. toggle switch, is the oscillator on-off control. Terminals A, B, and C connect to the second detector, audio-amplifier cathode and a.v.c. line, respectively, of the broadcast receiver.

This method of installation resulted in hash modulation of the oscillator signal—by the vibrator—that no amount of filtering would cure. This condition was easily remedied by powering the b.f.o. with the 10 or 15 volts of well-filtered d.c. available across the cathode bias resistor of the audio output stage.

Component values for the circuit are not especially critical, but stability of the oscillator is improved by connecting the base of the transistor to the cathode tap on the b.f.o. transformer rather than to the grid terminal. This results in an improved impedance match as compared to that obtained with normal transformer connections, and also decreased loading on the tuned circuit.

Fig. 2.—Transformer connections for transistor b.f.o. when T1 has a feed-back winding instead of a cathode tap.



Catalogues on hand indicate that 262 Kc. b.f.o. transformers may not be too widely available. One home-made substitute for the commercial unit is a good quality 2.5 mh. r.f. choke of the 3 or 4 section variety, tapped between the first and second sections at the ground end (see Fig. 1) of the winding. This inductor should be shunted with a fixed "silver mica" of approximately 150 pF. and a 100 pF. variable padder.

To avoid complication in the schematic, and because it is difficult to show the several circuits that will be found in various types and makes of b.f.o. transformers, Fig. 1 shows only the bare essentials of a typical unit. If the one on hand is permeability tuned, or if it has fixed capacitors not shown, it may be used in the circuit as long as it tunes to the i.f. frequency. However, some transformers have a feed-back winding instead of a cathode tap and, in this case, the connections shown in Fig. 2 should be used in coupling T1 to the transistor.

—D. A. Helton, W0PME, "QST," Feb. '58.

[Raytheon transistors type CK722 are not available in Australia. Some trade houses have their type 2N361 or 2N362 which are electrically similar. Practically any general-purpose transistor should work OK with suitably chosen resistors.—Ed.]

ENLARGING CHASSIS HOLES

To enlarge those chassis holes which are often too small, use tapered "repairman's reamers." These are available in two handy sizes for the Amateur—¼" to ⅞" and ⅜" to 1". They have square shanks and are used in an ordinary carpenter's brace. Be sure and hold the work firmly in a vice or clamps, and these reamers will rapidly remove unwanted metal.

—S. T. Clark, VK3ASC.

CLEANING GREASY HANDS

Ever got greasy hands? Really greasy, I mean, such as after a car job. The usual story is look for petrol or kerosene to "wash it off." Experience will have shown that you do, in fact "wash it in" by this means.

I have found that the best means of all (soap advertisements to the contrary) is a small quantity of engine oil just poured on the hands then "worked in". Wiping off with a clean rag will have then performed what is almost like a conjuring trick.

The grease, plus dirt if any, is sort of "floated out" from the pores of the skin, instead of being broken down into the pores as seems to take place with the petrol or kerosene method.

—Tom Laidler, VK5TL.

SLEDGE-HAMMER SPECIAL—A 2 METRE TRANSMITTER

(Continued from Page 7)

field strength. One of the "dipole-crystal diode-and meter" type of field strength meter is all that is needed.

It was found that 2 mA. drive was enough for each stage although more is available (i.e. you can drive the 832 to 3 mA. grid drive, but 2 mA. is quite sufficient for a plate voltage of two or three hundred volts).

In conclusion, the "Sledge-Hammer" has given several years of good service, with one or two "skeds" a week, and no trouble.

COIL SIZES

L1—42 turns 22 b.s. enam., close wound on ⅜" former

L2—8½ turns 22 b.s. on a ⅞" former, spaced ¾".

L3—4¾ turns, 18 g. tinned, ½" diam., spaced ¾".

L4—4 turns 18 g. tinned, ½" diam., spaced ⅝".

L5—3 turns 18 g. tinned, 1" diam., spaced ¾".

L6—1 turn 18 g. tinned, 1½" diam. (leads of 1½").

Separation between L3 and L4 is 1¼", and between L5 and L6 there is ½".

RFC's 1-2-3 are Eddystone u.h.f. chokes, 5.6 microhenry.

REFERENCES

1 "Two Metres, But How!" by E. C. Daw, VK5EF, "Amateur Radio," June 1956.

2 "Modification of BC625 Transmitter for use at 166 Mc." by E. Manifold, VK3EM, "Amateur Radio," April 1948.

3 "Crystal Controlled Oscillators," by C. Vernon Chambers, W1JEQ, "QST," March 1950.

CORRESPONDENCE

Any opinion expressed under this heading is the individual opinion of the writer and does not necessarily coincide with that of the publishers.

THE AMATEURS' STAND

Editor "A.R.," Dear Sir,

I wish to take an opportunity to say that I consider it a privilege to be admitted as an Associate Member of the W.I.A. by the Vic. Division, May meeting, at a time when the organisation is showing such remarkable fighting spirit, when confronted with this imminent threat to the Amateurs' existence posed by the P.M.G. proposals.

Equally remarkable was the reservoir of public sympathy and support revealed and reflected in the great reception, from both sides of the House, given Mr. Allan Fairhall's excellent statement of the Amateurs' case.

When I protested to my local Member and one Victorian Senator on May 6, I will honestly admit I was not then fully aware of the deeper significance of this struggle and the extent to which it is a public and national issue.

The June issue of "A.R." makes that very clear. The editorial pointed out that included in our code are Loyalty and Patriotism. What then could be more loyal and patriotic than fighting each and every manifestation of bureaucracy?

Nobody would consider bureaucracy too strong a term, after reading Allan Fairhall's reply to Mr Davidson, reported in Hansard for 13th May.

Some may consider that the matter ended in the debate on supply, however from now till August 17 much can and must be done.

One point raised by a letter in June "A.R." by VK3IZ, is worth noting, that is that it is not enough to proclaim the slogan, "Use the bands or lose them."

To the extent that the public can be acquainted with our case, and they in turn support us in our fight to right an injustice, then to that extent only can we justify our claim to the present bands, and retain them. We certainly are not normally obliged to justify ourselves before a government department let alone a sub-committee of the same.

In short, to appeal for fair play before the F.A.S.C. and the P.M.G. is naive (at the best). To raise our voice in the highest political forum is certainly a step in the right direction, a step leading directly to enlisting the fullest public support and sympathy.

I would make one concrete proposal, that is that Federal Executive draw up a letter setting out in broad terms our case, suitable for featuring in the local and daily press, have it roneoed and distributed to all members and urge that they be signed and sent off to the appropriate newspaper. In addition it could be printed in next "A.R."

Finally, although new to the W.I.A., I have long been aware of the excellent record of service given to the people by Amateurs in war and peace in this country.

Now is the time to capitalise on it.

—V. H. Richardson.

TO ALL SHORT WAVE LISTENERS

Editor "A.R.," Dear Sir,

In about a month's time the Remembrance Day Contest will be held. On behalf of this Division of the Short Wave Listeners' Group, I present our challenge to all comers, both for the highest score and for the winning State. We are ready, are you?

The N.S.W. section now has more than 75 members. The S.W.L. Council of this Division would like to hear from any s.w.l., no matter where you are. To end, let us hope that as the I.T.U. starts the day after the R.D., this Contest will be in memory of those who paid the Supreme Sacrifice and not of Amateur Radio.

Tim Mills, WIA-L2052, VK2ZTM,
Secretary N.S.W. Div. of the S.w.l's.


Yes sir! THERE'S A RANGE OF
QUALITY-TESTED AEE CAPACITORS
TO SUIT YOUR EVERY REQUIREMENT
AEE L51
TYPE W 99 MICROCAP
★ Patented construction of patterned metallized paper allows extremely small size for miniature applications
★ Leads actually soldered to unit ensuring positive contact of great strength
★ Suitable for wide range of frequencies up to and exceeding 100 megacycles per second
★ Available for A.C. and D.C working.
TYPE W 48 MICROCAP
★ Metallized paper construction with compact size for applications where space is limited.
★ Wide range of values up to 2 mfd.
★ Extremely low inductance not exceeding that of a piece of metal of similar size.
★ Well-known self-healing feature.
TYPE L 51 PAPER & FOIL CAPACITORS
★ Overlapped foil construction resulting in self inductance of extremely low value
★ Connections bonded to foil by special process ensuring low resistance at high frequencies.
★ Tough moulded casing providing clean engineering finish and wide range of operating temperatures
★ Available in a wide range of preferred values up to 1,500 volts D.C. working
AEE QUALITY-TESTED CAPACITORS
Complete specifications available upon request
Australasian Engineering Equipment
CO. PTY. LTD.
476 LATROBE STREET, MELBOURNE. FY 2638
N.S.W. Agents: Wm. J. McLELLAN & Co Pty. Ltd., 126 Sussex St., Sydney. BX 1131
Agents in all States
AE21

BOOK REVIEW

"THE RADIO HANDBOOK"

The frontispiece of the fifteenth edition carries the claim: "The standard of the Field for Advanced Amateurs, Practical Radiomen, Practical Engineers, and Practical Technicians."

The previous edition contained 31 chapters on all aspects of Radio and Electronics. This edition contains no fewer than 34 chapters; the additional three chapters have been added without increasing the U.S. price. The added chapters are "High Fidelity Techniques", "Electronic Computers" and "R.F. Feedback".

The existing chapters have been completely re-written where necessary and a total of 40 new pages added. Constructional articles are short, but complete enough for experienced persons. All the equipment described has that thoroughly engineered, commercial appearance for which "Editors and Engineers" have become famous.

I will not bore you with a lengthy description of everything in this book, but I condsider that some of the highlights are well worth mentioning. For some time now I have considered that a "turret tuner" from a television set could become the basis for a good Amateur receiver and pages 540 to 547 contain the description of an advanced receiver using such a turret. Local Amateurs would find it hard to obtain the mechanical filters used in the second i.f. of this receiver, but crystals for cascaded half lattice type filters can be obtained and should yield very similar results.

This edition of the "Radio Handbook" also includes a number of constructional articles on specialised single band "Transceivers" in addition to the more conventional equipment.

Our copy from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne. Price 85/6, plus 2/- postage

"MOBILE RADIO TELEPHONES"

by H. N. Gant, A.M. Brit. I.R.E.

This book has been written to assist company executives in choosing the right type of equipment for v.h.f. mobile radio communications. It explains the difference between a.m. and f.m. systems and enumerates the advantages and disadvantages of each. Equipment for both the 80 and 160 megacycle bands are discussed and also the procedures necessary to obtain a licence in Great Britain. Here in Australia, of course, applications for licences are made to the P.M.G's. Department.

Block diagrams and circuits of typical equipment are reproduced and used to describe the operation. Since the book is not intended for constructors, there is insufficient detail given for Amateurs to reproduce the equipment described. It is an excellent little publication and can be thoroughly recommended to persons contemplating the installation of a mobile radio system.

Our copies from Technical Book and Magazine Co. and McGills Newsagency, Melbourne. 34/9 plus 1/- postage.

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If you are contemplating some mobile operation, here is the very book you have been looking for. Every phase of mobile work is fully covered.

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Well there it is! By far the best all round manual on mobile operation we have yet seen.

Published by The Cowan Publishing Corp., New York. Price in Australia 35/- plus 1/6 postage. Our copies from McGill's Authorised Newsagency, 183 Elizabeth St., Melbourne; and The Technical Book and Magazine Co., 295 Swanston St., Melbourne.

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By G. A. Briggs

This is the fifth edition of a book on a subject of vital interest to anyone in the Radio-Electronics field.

This man, who is an acknowledged authority of world repute, deals expertly with his subject from its modest beginnings to these modern days of hi-fi and stereo.

Our copy from McGill's Authorised Newsagency. Australian price 29/6 plus 1/6 postage.

TUBE AND SEMICONDUCTOR SELECTION GUIDE, 1958-59

Compiled by Th. J. Kroes

This new addition to the Philips' Technical Library is designed to enable the user of electronic tubes and semiconductors to quickly determine which tube or semiconductor is to be preferred in different cases, to do this a series of tables are used as follows:

1. Philips' manufacturing ranges and their suitable equivalent types, giving type numbers.
2. Tubes grouped according to their most important properties.
3. Tables of types which should preferably be used in new apparatus.
4. Tables of tubes which should exclusively be used in existing apparatus.
5. Tables of tubes which may be used for replacement of obsolete tubes.
6. Descriptions of type-number systems and data of a number of tube bases.
7. Data of diodes and transistors.

Texts of the tables are printed in English only, translations of these texts in French, German and Spanish are given.

This book is another Netherlands production in the series of Philips' Technical Library and is available from Philips Electrical Industries Pty. Ltd., 69 Clarence Street, Sydney. Australian price: 13/-.

"'CQ' ANTHOLOGY"

The Best of "CQ" 1945-1952

This volume re-publishes in book form a series of the best articles published in "CQ" over the period mentioned. The articles have been chosen by Amateurs from all over the world as they are the people who have sent the numerous requests for information to the publishers of "CQ".

It contains a wealth of information that will be useful to old-timer and beginner alike, and is well worth the modest sum of 20/9 plus 1/- postage being asked by Mc. Gill's Authorised Newsagency and The Technical Book and Magazine Co. of Melbourne.

CHANGE OF ADDRESS

W.I.A. members are requested to promptly notify any change of address to their Divisional Secretary, not direct to "Amateur Radio."

DU1PAR TO OPERATE AT 10th WORLD SCOUT JAMBOREE

During 17th to 26th July a special world event will take place in the Philippines—the 10th World Scout Jamboree. It will be ten days of fun and adventure in fellowship and friendship with Boy Scouts from 69 countries of the free world participating. The scene will be at the beautiful Makiling National Park in Los Banos, Laguna, about 30 miles south of Manila.

The Philippine Association for Radio Advancement (67 Espana Extension St., Quezon City, Philippines) will put up an Amateur Radio Station and operate every hour on the hour during the entire period of the Jamboree under the call sign of DU1PAR on the following bands: 80, 40, 20, 15, 10, 6 and 2 mx.

The station DU1PAR will issue special commemorative QSL-Certificates for each and every contact established to commemorate this rare event in their country.

AMATEUR CALL SIGNS

AMENDMENTS FOR APRIL 1959

NEW CALL SIGNS

VK— **Australian Capital Territory**

1JE—J H. Edwards, 60 Ormond St., Turner
1VV R. M Marsden, Canberra Ave., Kingston

New South Wales

2BK—K. W. Jeffcoat, 180 Wellington St., Bondi.
2PI—W. Marsh, 188 Steyne Rd , Saratoga.
2AOC—R. J Brown, Childo St., Byron Bay.
2ATI J E. Shrubb, 33 Kingsley St., Byron Bay.
2ATX—I. E. Huser, 47 Victoria Ave., Concord West.
2AUK—R R. Butler, Black Forest, Bingara.
2AYG—P Gresser, Cr Powderworks Rd and Merridong Rd., Narrabeen North.
2ZBS—W J Steuart, 57 Cooks Av , Canterbury.
2ZGT—G. K. Trevitt, 2 Hassans Walls Rd., Lithgow
2ZHJ—J W. Hutchison, Flat 2, "Womboy," Edward St , Wagga.
2ZJR—R. J Rugg, 12 Roslyn St., New Lambton
2ZKP—L. K. Phillips, 179 Trongate St., Granville.
2ZMW—C. M. Wright, 11 Miowera Rd., Turramurra North.
2ZOL—O Longfield, 53 Illawarra St., Carlton.

Victoria

3OD—D. D. Watson, 64 Newcastle St., Preston.
3ZDE—R A. Ellis, 16 Clinnick St , Reservoir
3ZDX—J. McEwen, 28 Flowerdale Rd., Glen Iris.
3ZHA—A. L. Heath, Main Rd., East Eltham.
3ZHB—W. J Henry, 49 Kensington St., South Yarra.
3ZHJ—P. J Jackman, 16 Venrs Rd., Ashburton.
3ZHS—C. R. Saunderson, 5 Hughendon Rd., East St. Kilda.
3ZIA—B. C. Aeberli, Anzac Rd , Mt. Macedon.
3ZIS—S. M. Mackereth, 26 Derby St., Camberwell.

Queensland

4ZCC—M. C. Butler McMullen Rd , Brookfield.
4ZDL—D. E. Laver, 28 Hicks St., Mt. Gravatt.

South Australia

5ZDQ—E. J Patching, 18 Golden Glow Ave., Underdale.
5ZDR—M. J. McMahon, 25 Branksome Tce., Dover Gardens.

Western Australia

6CW—C. C. Patchett, Flint St., Wyalkatchem
6ZCA—T H. Mosel, 31 Nelson St., Inglewood
6ZCE—K. J. Kosina, 99 Middleton Rd., Albany
6ZDS—R. K. Graham, 40 Hensman Rd., South Perth.

Territory of Papua and New Guinea

9JR—J Rutherford, C/o. Posts and Telegraphs Department, Port Moresby

Antarctica

0DS—D. Smith, Macquarie Island.

CHANGES OF ADDRESS

VK— **New South Wales**

2HU R. H. T Yuille, 159 Mona St., Granville.
2IG—L. J. M. Bone, 2 Waratah St , Eastwood
2MD—R. M. Cumming, Lot 6, Newton Rd., Blacktown.
2MJ A. J. T. Crisp, 58 Greenacre Rd., South Hurstville.
2OS—L. N. C. Crisp, 6 Glenroy St., Thornton
2OZ—W. E. Dixon, Evans Pde., Glenbrook
2ACW L. R. Hawkins, 13 Allen Rd., Blacktown.
2AJC—B. J Eve, 125 Pentecost Highway, Turramurra
2AMV—J. A. Meagher, 28 Bandon St., Forbes.
2AUT—G. Taylor, C/o. Mrs. Norman, 535 Canterbury Rd., Campsie.
2ZAN/T—K. N. North, 199 Stewart St , Bathurst.
2ZCO—A. F. Cook (Mrs.), 46 Liverpool St., Cowra.

Victoria

3GO—R. C G. McGowan, 40 Williams Rd., Blackburn.
3JK—J. K. Herd, Portable, "Kinta," 6 Balcombe St., Mornington.
3QY—C. W. Richardson, 1152 Nepean Highway, Cheltenham.
3AZJ—D G. G Johns, 21 Nioka St. Chadstone.

Queensland

4UN—R. J Scott, "Anthony's Wood," Patricks Rd., Grovely
4ZAT—T R. Cuttle, North St., Bribie Island.
4ZCE—K. M McKay, Yandina Rd , Nambour

South Australia

5AP—H R. Hodgson, 29 Carroll Ave., Kilburn.
5PT—F. K. Tapley, Government Rd., Yatala Vale.
5ZAC—K. J. Skewes, 15 Hutchinson Ave., Risdon Park, Port Pirie.

Western Australia

6HK—D. E. Graham, Lot 920, Purdom Rd., Wembley Downs.
6KV—D. T Lysle, Flat 3, 10 Smith St., Highgate.
6RO—B. J Sorley, 40 Williams Rd., Hollywood.
6SK—A. A Skinner 104 Addis St. Kalgoorlie.
6ZBA—J R Bartlett, 22 Queens Cres., Mt Lawley

Tasmania

7ZAG—W. G. Grewling, 4 Mimosa Court, Berridale.

VHF

Frank P. O'Dwyer, VK3OP
190 Thomas Street,
Hampton, Vic.

Editor "A.R.," Dear Sir,

After reading the v.h.f. notes in the May issue of "A.R." I had another look at the cover to make sure it was not the April issue. As it was not, I can only assume that the remarks on Tasmania's appointment as Federal Contest Committee were made seriously and not meant as a joke.

Anyone who accepts office in the Institute, or any other body, must expect and accept justified criticism, but it surely is a new departure to criticise the actions of a committee before it has even been convened. The anonymous VK2 is entitled to his opinions, even if we in Tasmania consider them derogatory, but it certainly is not in the best interests of the Institute to publish them in the eidtorial content of our journal.

However, it is not too late yet, the way is still open to have this "tragedy" rectified. This Division was asked by Federal Executive to accept the functions of the Contest Committee when it was relinquished by South Australia. However, as far as I know, the appointment has not yet been ratified. Therefore, it is not too late for the N.S.W. Division, or the V.h.f. Section of it to come forward and offer to take over the F.C.C. and, in this event, Tasmania would, I am sure, be only too happy to relinquish the somewhat dubious honour.

—K. E. Millin, Hon. Secretary,
Tasmanian Division, W.I.A.

The above letter is the most welcome ever received, more important it is better than any other ever quoted here. It is the practical proof that the W.I.A. has a very vital core of enthusiasts who are the antithesis of the bulk of the members who attend meetings, maybe collect QSL cards, pay varying degrees of interest to whatever is going on, who earbash at the slightest opportunity and who are quite prepared to allow someone else to carry out the onerous duties, both executive and odd job, which allows the W.I.A. to function both in the Divisions individually and as a unit through F.E. While this living core remains, undoubtedly there is such in each Division, then the W.I.A. will continue to function as a living body prepared to fight for its rights and at the same time keep its own house in order. It is the best answer to those who claim that the W.I.A. is a dead body, that those who run it are a lot of dead heads, that they wouldn't know how to fight for their rights if they had to.

The quote of the letter referred to by VK7 (May 50 Mc. Notes, V.h.f. page) was not directed by the writer at VK7. He mentioned another Division altogether. I accept the responsibility for the change made. Unfortunately my wisdom was on the negative side, a re-reading of the quote on my part made me see it in the same light as VK7. This was never intended. As the original writer of the letter was not at fault, I ask VK7, as a Division, and those individual members who may form the F.C.C., to accept my apology for the first line of the quote. I offer my apology also to the VK2 Division and the writer of the letter. Having come to the W.I.A. with the A.R.T.L. when that body, in the interests of Amateur Radio in VK, fused with the W.I.A., and having remained active ever since, I cannot see the point in sniping at any member or Division at this late stage, so weakening the body as a whole.

The remainder of the quote is a general expression of opinion which may be heard on the 50 Mc. band at any time from innumerable stations. The R.H.C. rules are a great talking point and one in the forefront of discussion all the time. Most of us wish that we were at some other place most of the time, e.g., the rest of VK on VK4 to have a crack at the Ws and other DX, the east coast boys in the west, so that they could have a try for ZS; the VK4s in VK3 so that they could make full use of 144 Mc. during the Contest, and so on. We Hams are never satisfied.

As it is, the R.H.C. is not on 50 Mc. alone. Let us look at 144 Mc. 144 Mc. scores many points for VK3 in that they can use the band to work VK2, 5 and 7 if conditions are right. But where does that leave the other Divisions? Southern VK2 can work VK3, whilst Sydney in the past was linked on one occasion with ZL. VK3 work VK2, 5 and 7; VK4 have the dubious honour of working DX on 50 Mc. (missing but for a couple of contacts during the last contest period), but nowhere on 144 Mc. VK5 can manage VK3 and 7, on a couple of break-throughs in the past they have swapped sigs with VK6, but that is not the regular happening, and these openings were VK6's only DX. VK7 can contact VK3 and 5, whilst in VK9 it is going to take a lot of painstaking work before they crack the 144 Mc. DX barrier.

That gives some idea of the problem facing F.C.C. located in any Division. The geographical factor affecting all Divisions and parts of Divisions on the bands used. Quite frankly, my own personal opinion is that VK3 is the favoured Division at present. But whoever wins or wherever he may be located, a lot of time, energy and concentration is required on the part of the winner and he has earned his win the hard way.

Another factor is the period of the contest. Originally brief, the period was extended. This year, for the first time, the complaints are that it is too long. The opposite views on this are: (1) The shorter period would allow the Contest to be over and done with, so permitting intrastate ragchews for the remainder of the season when Es openings are frequent. At present in most cases the Contest contact is "Hello, number, goodbye." (2) The longer term suits those whose yearly leave covers the Christmas-New Year period and whose family at that time wish to go on holidays. So, briefly, the shorter period suits the single man who has only himself to consider, the longer the family man. These arguments have all been thrashed out before but very few of the OT's remain on the band for the Contest, there is a new and rising generation in their place now.

Items of particular interest regarding operation in the Northern Territory appear from 3HE and 4ZBE. With stations operating from there, some of the heart burning re the W.A.S. Certificate should be eased.—3OP

NEW SOUTH WALES

Meeting, 1/5/59.—27 members were present to hear a lecture by Dr. Bob Black, 2QZ, on Computers. He covered the field very well in the time at his disposal, from multivibrators to counting circuits, and in an easy to understand manner. Jim 2PM presented the 1958-59 Chairman's Trophy to Dick 2ZCF in the form of a travelling clock for shack and mobile use.

Coming Lectures.—July meeting, a lecture on "The General Application of Transistors," by 2AAH. August, by 2RW, "The Design and Construction of Transistor Power Supplies."

Coming Events.—Hidden night Tx Hunt on 15th July, details over the Sunday Night V.h.f. Broadcast. Mid-winter contest to be held on July 25 and 26. Sat., July 25: 8 to 10 p.m., a scramble on v.h.f. 6 and 2 mx. and u.h.f. 288 to 576 Mc. and up. Contacts must be two-way on any band, no cross band operation will count for points. 30 minutes per band must elapse before contacting the same station on each band. Points score is: 1 point per v.h.f. contact, and 3 points per u.h.f. contact. Sun., July 26: 8 to 10 p.m., a message handling contest on 2 mx only, in which each station may originate a message each 30 minutes, i.e., each station may originate in the time four messages. This should ensure plenty of activity chaps. Points score will be 1 point for a message in, and 1 point per message cleared.

Day Event, 24/5/59.—This took the form of a progressive Hidden Tx Hunt and commenced at 10 p.m. from the Bear Farm, Pennant Hills, with John 2ZAV as the first fox. Eight cars attended. The day was won by Bob 2OA with two catches.

Night Hidden Tx Hunt.—On 13/5/59, John 2ZAV as the fox proved that you don't have to go to the scrub to hide successfully as the fox was parked in the middle of a large field with darkness his only cover. Some hunters walked within yards and did not spot him. Placings were 2OA 1st, 2RX 2nd, 2PM 3rd. A very nice supper was provided by John and XYL Pat.

Wal 2MZ has been having nightly skeds with 2HL and is putting a 576 Mc. m.c.w. signal into Horrie's from Blaxland. Rx is on the way and two-way contacts should be on soon. 2ZCH is also working on 576 Mc. equipment, and 2ZAC's lecture in June on 576 Mc. should stir up interest. Dave 2AWZ is sporting a new mobile chariot and beam as also is Phil 2ZBB with Phil 2ZBX considering doing so. John 2ZAV working on transistorised mobile gear, Ken 2XS in Tamworth going on 2 mx soon with a 522 and V.h.f. Group converter. Rod 2ACU doing some re-building for Urunga locals. 2ASZ suffering t.v.i.

6 Metres.—Good opening to VK3, 4 and 5 for a few hours on 12/5/59 at about 6 p.m., but nothing much besides. 2AXI has got going on six and heard 5/9 at this QTH.—2ASZ

Additional 50 Mc. News.—2ZCH rounded off April by having somewhat difficult contacts with 5ZAG and 5BC at 2130 on 29th. On May 2 I heard JA4IO working VK6s. Barry 2ZAG and I managed to contact him 5 and 7/8 both ways at about 1500. JA5IO was again heard calling CQ at 1450 on May 10. Neither Barry nor I made a contact on this occasion. The 12th had 2RX, 2ZCH and 2MZ making good contacts with 5BC, 5MK, 5ZGA, 5ZBM and 4ZAX and 4ZAA.

An s.w.l. informed me he heard 5NE on 21 Mc. tell someone, "That 2HE would be interested to hear that I (5NE) am taking 8 and 6 mx gear to the N.T." I am most interested and would like further details re times of operation and how long he proposes to operate there.—2HE.

VICTORIA

Six Metres.—The big news last month was of course 3ALZ working XE1FU on the 2nd. 3ZFA and 3ZBN heard the signals but were unable to work anybody. Everyone else seemed to be elsewhere. Later on the same day, JAs were in at 1900 hours. June 7, VK4 came through at 1445 at good strength to delight those on the band. Last out at 1530 was Bob 4NG. Quite a few of the newcomers to the band in VK3 worked their first DX. Apart from these openings, 50 has been dead from the ears down with the exception of scattered reports of signals, and some scratchy contacts by 3ZER portable in no-noise areas.

Two Metres.—The Ballarat gang provided the following information. During May the first breakdown in the regular skeds with 3ZCW Ouyen and the Ballarat gang occurred. On May 21, 23 and 24 signals were very poor, but on 22nd it was a washout, and the boys report that the cosmic noise level appeared to be fluctuating up to 3 db, at the rate of from 1 c.p.s. to almost a "motor boating" rate. No definite relation between noise and direction could be discovered, so the cause remains a mystery. 5BC has been sighted on odd occasions, the latest being on June 1 when 3ZEJ heard him at S3. A new station in Ballarat is John 3ZFW, and an old station due to reappear is Stan 3SE. 3ZB5 makes the suggestion that a 12 or 24 hour contest be held on the v.h.f. bands every so often. Any bites?

One Metre.—Tests are still being carried out by the interested parties and some new gear is being developed. However nothing special has occurred lately.

576 and Above.—A minute's silence, please.

Request.—Would anybody willing to take over writing these notes and doing the broadcast please come forward, as your scribe has too much on his plate at the moment, with P.R.P., W.I.A. logs, 50 Mc. campaign, not to mention trying to keep on the air. Please.—3ZDG

Technical.—Les 3ZCN has produced a couple of working parametric amplifiers for 2 and 6 mx. Some pointers. (1) He has a buffer stage (6AK5) between the pump and the varactor, and varies the injection by varying the screen volts. (2) He uses the OA10 diode (Philips). (3) He has separate input and output links at the cold end of the tank, where the injection link is also. (4) He is using a coil of 6 mx, trough lines on 2. (5) Six mx noise figure measured 1 db. Due to inherent error in measurement on a single tank amplifier, probably 4 db. (6) Gain on 6 mx 30 db.

Tubes.—The ECC189 mentioned recently is also called a 6ES8. 3ZDG.

QUEENSLAND

Brisbane.—May 1 brought JAs, also the 4HD/4XJ link started with a 30 minute QSO. Max 4HD building a long yagi. 4XJ has been heard at this QTH. 4ZAX swapped reports with Leo, not a bad haul, Dave. Bob 4NG dropped in on the Bundaberg gent and I believe that they are going to try to get through to Rocky at 1915 hrs. Heard Laurie 4ZGL having a f.b. long QSO with JA1BLV one evening. Max 4HD had a scratchy contact with Exter KH6CTC on the 10th, he also heard W3BJG/KH6 and K6HGP/KH6. Our "DX" station, 4ZAT, is settling in on Bribie Island, but is kept too busy to get much time on 50 Mc. Had an unexpected break to VK3 and 5 on the 12th, heard an occasional VK2. 2ZES first copied here at 1915. It stirred up quite a few of the gang. A good piece of work, Ian 3ALZ, in working XE1FU. Congrats.

A nice opening on 15th, JA1, 2, 7, 8 and 0 heard here. New call signs coming in Brisbane. Heard Ron 4ZBZ airing his gear one night with 4DR, welcome to 50 Mc. Ron. Had JAs in on 23rd, 24th and 27th for short sessions. The Buderim-Bundy link still going, but no luck with Bundy-Rocky so far. Heard 4ZAB (Ipswich) at S5 on the 24th.

End of month had a few surprises. JAs in 29th and KH6s. 4HD worked KH6CTC 5/9 each

way and KH6DFF 4PU collared a JA8. Congrats 4NG on coming "top dog" in VK4 in Ross Hull Contest. Believe 4NG has a KA7 QSL in his shack now.—4ZBI

North Queensland.—Six has just started to fade for the autumn season. So far I have had over 1,250 contacts for about 350 different call signs. Last JA sigs heard here June 3. They are now weak and heavily affected by QSB. The KH6s were still coming in up to May 16 with some very good contacts. Most surprising incident during May was a half hour 5 x 9 QSO with Russ 9XK on May 10 at 1530 E.A.S.T. Also heard on the same day betwees 1040-1200 E.A.S.T. were 2HE, 2ZCF and 2ZAC. With all my efforts they refused to be worked. Signals were from S6 to S9 all the time, but one by one they QRT and nothing further was heard from VK2 or other areas.

Bob 4RW has at last made his appearance on 6 mx with a 2E26, 10w., 4 el. yagi outfit. Bob has had a few contacts on 6 with JA and also managed to get one with KH6CTC. The JA8s have broken into their Es season now and it is hard to get a contact. KR6MD has hit the ether in Okinawa and KR6AK is all set to go home to U.S.A. There is an FK8 station on the air now but as yet no contacts with him.

His freq. are 50.00, 50.25, 50.75 and 50.85. Radio Peking seems to come through strongly on 50.8 and also another f.m. station on 49.7

4ZBW has been transferred to Darwin and promises to be operating soon, now there will be a Z station in the Northern Territory at last. 4ZBJ has been told of a transfer from Atherton to Brandon, a bit closer to this QTH, so we hope for increased activity.

144 Mc.—At last the "2" barrier has been cracked between the Towers and Townsville with 4LK and 4ZAK doing the honours. General tendency is for the "2" sig to be far above the "6" sig in strength, also it remains more constant in strength, six has some very bad fades. 4LK is using an 832 final and a 10 el. yagi, 4ZAK is using a 522 with a 10 el. yagi also. 4ZBW is using his 50 Mc. tx for local contacts on 144 Mc. but could not make the "Towers".—4ZBE.

SOUTH AUSTRALIA

Most activity for the month has been on 288 Mc. Garry 5ZGH has very nice modulation on 288 Mc. for a mod. osc. George 5GB has the nicest 1 mx signal that I have ever heard. Barry 5ZBZ has his 12AT7 transceiver going nicely, and has had several crossband contacts with Al 5ZCR, 288 to 50 Mc. Vic 5JH has been mobile most week-ends with trips to Sellicks Hill and Bumbunga Hill. Signals received in the city from Vic have varied from 5 and 6 to 5 and 9, very nice going for a distance of 80 miles with mod. osc. and super regen.

Graham 5ZAP is getting some gear together for xtal control on 288 Mc., starting off with the tx. George 5GB, when he is on, runs a cool 100w. to his 829B on this band, a beautiful xtal signal George.

Bill 5ZAX has beaten the gun in this Division with his t.v. transmissions on 288 Mc. I haven't the details of Bill's gear yet, but know that he intends feeding the signal into a 32 el. beam. I also understand that Keith 5MT has built a 288 Mc. converter for his t.v. rx and that Sid 5ME and Clem 5GL have done likewise. Wish I had a t.v. rx to monitor your signal Bill. Al 5ZCR is also interested in t.v. and is building a rx using a 5BP1.

The final fox hunt for this season was a combined effort on 288 and 50 Mc. Eight mobiles took part on 288 and three on 50 Mc. The hunt was enjoyed by all participants with Brian 5ZBI winning the 288 division and Hughie 5BC winning the 50 Mc.

50 Mc. has been very quiet with only one break through and that to VK4. John 5ZDL does a regular re-broadcast of the 5WI session on Sunday mornings, with transmissions on 288 and 50 Mc. Mick 5ZDR is re-organising his gear and putting everything into a rack. He is also v.f.o. controlled. Bill 5WR has just received his 50 Mc. tx from Al 5ZCR and should be on the air shortly. Bill has been listening on 50 Mc. for some time. 5NO situated at Elizabeth has almost completed his 50 Mc. gear. He will be running 150w. using his present rotatable G4ZU with parasitic elements for 50 Mc. Don 5TM also of Elizabeth is erecting a beam and should have it up by now.

John 5ZJM will shortly be mobile 50 Mc. in VK3. He has converted a taxi tx and his freq. is 50.8. Peter 3ZDR paid VK5 a visit recently and did the rounds of the various shacks, our worthy V.h.f. President, Al, playing host most of the time.

The V.h.f. Section held a demonstration of the D.M.E. equipment used by the Dept. of Civil Aviation. There was quite a good attendance, the boys being over-awed by the osc. used and the power it was running as well as the natty tuning condenser in the grid lines to control the frequency.—5ZAW

WESTERN AUSTRALIA

June has been a very quiet month from the DX angle—several JA openings, but signals subject to very heavy QSB and openings very short. So far there has been no sign of any opening into ZS, and I feel that no such opening is likely now. It appears to me that any reflections in an East-West direction cover a very narrow area of territory (sea?) and Africa is missed entirely (note our working VK9 on F2 but no VK4, and last year's openings to ZL1 and 2 but no 3s and 4s).

Activity, generally, here has dropped considerably—the most active stations being 6BO, 6ZBZ, 6ZBY, 6HK (glad to see you back on the air, Don), 6BE, 6ZBG, 6ZBC. 6ZBX has re-appeared after a long absence—beam building. Russ has demonstrated that the ZL Special really works on 6. Jack 6ZBU has now shed his "Z" and is 6BU. Jack has been heard trying his wings on 40 and 80, but still conducts his nightly sessions with 6GB.

Keith 6KH was at the last fox hunt. He will probably be moving to Mosman Park in the near future (more QRM, Roy!). Talking of fox hunts, Wally 6ZAA ran the last one. Modesty forbids any mention of the winners, but Mrs. 6ZAV finished up receiving the prize.

Another re-arrival in the city is Ron 6FM. Ron is settling back into his old home at Applecross and should be back on the breeze before long. Mobilers 6BO, 6ZCB and 6ZAA may be heard frequently running 50 Mc. mobile. Rolo has done two trips to the south west operating mobile each way and has had quite a deal of success, especially as Bob 6ZBY is strategically placed en route.

We believe Rolo has received that JA9 card and can now apply for his A.J.D. (50 Mc.) which he has worked about six times over. This will be the second award for VK6 with two or three other chaps still awaiting QSLs. Others will be waiting for the spring openings to complete the award. Better make the most of it, chaps, it may be the first and last time in history that this award is possible on 50 Mc.!

The beacon has ticked up some 800 or so hours but, since VK9, there have been no further reports. The writer intends to make an all out effort during September/October to work those countries which have heard or been heard by VK6, i.e. DU1, VU2 and possibly KR6 and VS6. These should be certainties, but so far seem to have missed out.—6BE.

DX

John C. Pinnell, VK2ZR
15 Summit Avenue,
Earlwood, N.S.W.
Phone UW 4248.

Just a thought These remarks are mostly concerning the bands used for DX purposes.

We all know that the Law of the Land permits phone and c.w. to be used in any part of these bands. Now, that is OK from the official point of view, but as one of those who is crushed into these narrow limits it seems to me that if each of us was to abide by the "Gentleman's Agreement" which has been in operation for many years things would be more comfortable for all.

Reports support my observation that there is a growing amount of phone appearing from the VK gang in the c.w. section of each band. I appeal to these fellows to move up a little in frequency and so separate the phone from the c.w. Of course the c.w. man has no legal right to the lower few kc. of each band—it's only a "Gentleman's Agreement"—but it does help the majority when the going is tough in overcrowded bands.

Perhaps some of the newer chaps didn't know about the agreement, and perhaps some of the not-so-active old-timers had forgotten it. How about it fellas.

Just a few words in support of the s.w.l. DX men. I would like it to be known that much of the news on this page is passed on to me by the S.w.l. Group, especially those in N.S.W. and Victoria. Often their reports give additional support to news and comments by licensed operators. A cross section of all reports make it possible to pass on reliable information concerning band activities, QTH, etc. Some of the listeners feel they are losing publicity. Especially dropping the s.w.l. column in "A.R." (This month it has been re-started after another volunteer to write the notes has been obtained.—Editor.) This is bad. While it may be due in some part to lack of organisation on their part, I would like to see more encouragement given them by the fully fledged Amateur. They give strength to the W.I.A. membership and from their ranks many new Amateurs are born.

NEWS AND NOTES

There is a possibility of **VK5BV** making a trip to Portuguese Timor in the near future. It all depends upon whether the necessary equipment can be made available. He said he can open up from CS10 within 3 or 4 weeks after equipment is operational. Anyone interested can contact Ray on 21 Mc. phone, where he is quite active, or write him direct to: R. C. Howland, C/o. D.C.A. Mess, Darwin, Northern Territory, Australia.

W2BIB and **I1ZFF** are working out plans for a DX-pedition to Nepal during mid-August. The call prefix will be 9N4. They expect to be there for about two weeks.

HL9KJ is genuine and is working phone most of the time and some c.w., 14 and 21 Mc. are used.

W0AIW and **VQ4ERR** will make a trip to the Seychelles as VQ9ERR and should be on the air about 22nd August. 14 and 21 Mc. will be used. The station will be fairly high powered.

DL9PF, DL1KB and **DJ2MN** will operate from Andorra from July 20 through to 30. C.w. only, 24-hours-day and all bands.

Afghanistan **YA1IW** is reported to be working on 21 Mc. s.s.b. daily, and **YA1PB** is currently working 14 Mc. a.m.

W8PVH will be active from Pakistan in the near future. His license application has been approved and he hopes his call sign will be either AP2R or AP2JR.

Iwo Lima.—**KA0IJ** and **KA0IM**, s.s.b. may be found on 14 Mc. daily commencing about 1200z.

CR5AD is active from Portuguese Guinea. He is using 100 watts.

The Cook Electric installation crew now in Nepal includes four Amateurs. None are believed to be hot DX'ers but the King has given permission to operate Amateur stations. Both phone and c.w. will be used on 10 and 20 mx.

VS4JT is active from Sarawak on s.s.b. and c.w. on the 14 Mc. band. Listen for him between 0900 and 1200z.

VP6PV is crystal controlled on 14100 Kc. and is very active around 1100z.

MP4BBW's tentative plans for his s.s.b. DX-pedition are: MP4QAN, Qatar, July 15 to 18.

LU3ZC currently active on 14 Mc., is in the South Shetland Islands. There has been some misunderstanding about his QTH as he gives it as "Antarctica". This is not the case for DXCC purposes, it is South Shetland Islands.

It is understood that **EA9CA** now has permission for s.s.b. operation from Ifni.

VS9MB, Maldive Islands, is temporarily off the air due to a burnt out transformer in the tx. A replacement is expected any time now.

CR7BS is a club station in Mozambique. They are now working s.s.b. on 14 Mc. with low power, but hope to boost their signal soon by the addition of a linear amplifier.

Poland's first s.s.b. station, **SP2PL**, is now operating 10 through 80 mx with about 150w. His XYL's call sign is SP3SQ.

Jan Mayen.—No station will be active from this location during 1959 and 1960, according to LA8CF. He is investigating the possibility of getting up there in 1961 for a few weeks DX-pedition.

YA1PB, Afghanistan, is fairly active on 14 Mc. phone between 1400 and 1600z. (W6BSY)

Aaland Island.—**OH2RD**, with **OH3QC** and **OH3ND** plan to operate as OH3AB/0 or OH-3QC/0 from August 7 to 16. OX3ND is XYL of OH3QC.

CE0AC, Easter Island, is now active Wednesdays and Sundays from 1315 to 0300z. QSL via CE3HL or the R.C.C.H.

Franz Josefland will be put on the DX map by UA1CK on all bands during mid-August.

FP8BY will be the call used by **VE2ABE** and **VE2JC** while on a visit to St. Pierre Island. 14 Mc. c.w. and phone will be used. Time, late June and early July.

W2HTI, in a letter to 2EG, says, "My Buddy, **K2JGG/FP8AB** will be operating from St. Pierre and Miquelon during the first two weeks of July. He hopes to have s.s.b. in addition to a.m. and c.w." **W2HTI** is also **FP8AB**. He expects to be back on St. Pierre Is. during first half of September. Will be operating on c.w. and a.m.

I1ZFF will probably be active as HV1CN, Vatican City, in July. He intends using s.s.b., a.m. and c.w.

VR1B would like to work as many VKs as possible. He operates on all bands, 3.5 through 28 Mc. It is known that he would appreciate a fair go by some of the DX hungry QSO busters from other places, if they would wait until each contact is finished.

ADDRESSES

FE7AI—Paul Canavy, Rue des Remparts, Cayenne, French Guiana.

9G1CF—Dr. Hugh de Granville, Box 4, Winneba, Ghana.

VS9AE—Ian Dunbar, V-4 Bandar Sheik, Little Aden, Aden.

VS9AB Major G. R. K. Lyon, Armoured Car Sqn., Aden Protectorate Levies, B.F.P.O., 69, Aden.

EA8CM—J. M. de la Vega Artiach, la Transversal de la Salle, 31, Santa Cruz de Tenerife, Canary Islands.

ZB1NR—4193257 S.A.C., N. B. Rivett, Air Radio Section, R.A.F., Ta-Kali, Malta.

ZB2Z—R. W. Bush, Room 1, "C" Block, R.A.F., New Camp, Gibraltar.

HK7AB—H. McCormick, P.O. Box 216, Bucaramanga, Colombia.

OD5CI—QSL C/o. U.S. Embassy, Beirut, Lebanon.

SV1AB—G. Vernardakis, 3 Erythreas St., Peristeri, Athens, Greece.

ZC4RJ N. Joyce, Hq. Forces Broadcasting Service, B.F.P.O. 53, Cyprus.

VP2EG—QSL via G6KS, Holwood Park Ave., Farnborough, Kent, England, or via R.S.G.B.

ST2KO—P.O. Box 30, Khartoum North, Sudan.

ZE7JI—H. B. Helm, P.O. Box 272, Sinoia, Sth. Rhodesia.

HK3RJ Dr. Jorge Reynolds, Apartado Aereo 62-36, Bogota, Colombia.

ZC1BP—S. J. Butlin, 148 Yew Tree Lane, Sth. Yardley, Birmingham 26, England.

CE0AB—QSL via W1DWH, 147 Glenwood Av., Boston 36, Mass.

EL4A—QSL via W7PHO, 18549 Normandy, Seattle, Washington, U.S.A.

EA0AF—Box 195, Fernando Poo, Spanish Guinea. (2QL)

3A2CZ—QSL via ON4QX. (2QL)

FM7WU—H. Fontaine, P.O. Box 61, Fort de France, Martinique. (BERS195)

OQ5JR—Bob Cenier, P.O. Box 27, Shinkolobwe, Belgian Congo. (BERS195)

W2CTN is QSL Manager for **JZ0DA**.

Anybody unable to extract a card from **ZD3G** to date may find a try via **W2ZGB** worthwhile.

QSL's RECEIVED

2AHH—JT1AA, JB2L, JZ0PB, OQ5AO, UR2KAE, ZE2JA.

2AMB—ET2VB, FB8XX, OQ5HU, VR1B, VS1FJ, VS1GZ.

2QL—EA6AM ET2VB, HI8BE ST2KO, TI2LA, VP2LU, VP9EP, SV0WRE, 4X4IO, 4S7FJ

L3065—BV1US, PI1J, YV5AEC.

BERS195—ET2UB, FM7WU, GC3CNC, KX6CO, OQ5JR, PY2KT, UA1RF, UR2BU, VK-3AYY/LH, VK2FR/LH, VK9JG, VQ6AB, VR1B, VR2DE, ZC4PN, XV5A, 4X4FU

ACTIVITIES

7 Mc. C.w.: **2QL**: UA0OM*, UP2NM* **BERS-195**: DM2ABL, DU7SV, EI2S, ET2US, G3EYN, GB3AWR, HA5KDQ, LA7K, LZ2KSL, OK3KMY, ON4JB, SM3HR SP6QH, UA3HK, UA0FT, UB-5CW, UP2NM UQ2AW, UO5IT, UR2KAE, VE-8MX, VQ4FK, VR1B, YU3IE, YO3AC, ZE7JV, ZS4JD **BERS1002**, Gs, KH6BDV/KJ6, WH6DBR, YU3ALJ, Ws.

14 Mc. C.w.—2AMB CN8BP*, KM6BL*, KC-6JC*, LU9AC*, TI2WR*, VE8DC*, VQ4HT*, VR5AC*, CX3CO, HH2LD, HT1AW KW6CW, TI2PZ VP5FR VQ4CW, VQ6LQ 4S7FJ **2QL** EA8CG*, EA0AF*, F2CB/FC*, TI2WP*, UN-1AE*, UP7NM*, VR5AC*, 3A2CZ* **2ZR** DJ-1RK*, F2FA* G2HNO* GM3HQN*, HB4FD*, HB9WE*, HB9VW/FR*, JZ0DA*, LU1NE*, LU-8FBS*, OK2KEH*, OY8RJ*, OZ1QM*, PA-0WBR*, SM7CZ* UA3HK*, UB5KDK*, UC2AA*, **4DO**: W/Ks*, KH6s* DL6DE*, HA5TO*, SM-3AGD*, SP6AAT*, SP8HU*, UC2BG, XW8AI. **BERS195** BV1USC, CN2AY, CX6CO, FK8AW, HB1RM, HC4IE, IT1PDN, JZ0DA, KM6BK, KX6CO, LX2GH, TI2WR, UH8KAA, UP2NM, OQ3CG, VK9GW, VK0RT, VR1B, VR2CC, VU-2JA, 9M2DW, LA7RF/MM, LA1OF/MM, LU-0AC/MM, UA0LS/MM **BERS1002**: FO8AC, G3JKI, KP4AZ, KX6CJ, LA7RF/MM, PJ2AE, UB5FB, UQ2KAA.

14 Mc. Phone.—2AMB: CN8LE*, KB6BH*, VP5FR*, ZE7JR, FA8CF* **3AOM**: G2PL*, G3EHT*, I1CVS*, I1XB*, CT1EY*, OA4DA*, OA9B*, ON1DZ*, VEs*, XE2KO*, YS1MS* **4DO** CO8JK*, KHs*, KP4AMR*, W/Ks*, EA-1BC, HK7LX, VE2CO, VU2SS 9M2GA* **L3065**: Ws all districts, K7KFX/KL7, KR6OU, KW6CJ, KX6AF, VE7JZ.

21 Mc. C.w.—2QL: TI2WR*, XE2AW*, **2ZR**: DL7AQ*, F8DA*, G3EFT*, GC2CNC* HB9UB*, KP4AOO*, OE3NH*, OK1KT1*, SP5KBE*, UA-0KUV* 4X4CJ* **4DO** W/Ks*, KH6*, BV1USB*, CO2US*, DL7AQ*, DM2AEB*, DU7SV*, F3AB*, FK8AB*, G2DC*, G5XY*, JAs*, KX6CN*, OK-1KTI*, UA4IF*, VP9CR* FE8AH, JZ0A, OK-2WL, KR6AK, SP2KAC, TI2CME UA0UV, UA4KYA, YV5ABL.

21 Mc. Phone—4DO: W/Ks*, KH6s*, FK8AB*, FQ8AE*, VR2CS*, HK3OK, HK5ER, OA8N, VK-9MP, VK9RO, **L3065** G2AMG, G3CKH, G3JAF, G6VX, G8MM, GI3JIM, VRs, KB6BH, F9YK, FK8AU, FK8AV, VK9RO, Ws, KH6s.

28 Mc. C.w.—2QL: XZ2TH*. **4DO**: W/Ks*, KH6s*.

28 Mc. Phone—4DO: W/Ks*, KH6s*.

The bands seemed rather patchy this month. At times Europe came through with plenty of punch on the 20 mx band but the periods were quite short. After 2020z there was some good pickings for about one and a half hours, but these cold mornings and breakfast time prevented much activity from the VK-gang. Rare DX was scarce. 15 metres did not open until the afternoons when signals were good but made difficult to work easily as the band was full of W signals. Got very little information on other bands.

That about finishes it for this month except for my thanks to all who supplied me with information. I have used extracts from the DX Bulletin published by W4KVX. 2AMB for info. and comments, 2QL for first hand tips collected between snagging the rare ones and handling the QSL duties, 2AHH is looking for Zones 2 and 35. Any suggestions? Could have helped about 3 months ago. 3AOM has worked three American stations at which Neville VK3ACN is staying. According to Neville he is having a wonderful time. BERS195, Eric, as usual is doing good work with receiving and also getting swags of QSLs. BERS1002 has heard 90 countries so far this year which brings his overall total to 181. L3065 would be pleased to see you in person when you come to Sydney Don. 2EG, thanks for the phone call Bill.

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* Call signs and prefixes worked.
z zero time—GMT.

S W L

Maurice Cox, WIA-L3055
Flat 1, 37 Boyd Crescent,
Olympic Village, Heidelberg,
N.23, Victoria

(Enquiries have been received as to why there have been no S.w.l. Notes. Ian Hunt, your previous scribe, found it impossible to carry on. Early in May, Maurice Cox approached me with an offer to write the notes, which were to commence in the June issue. Owing to the extensive coverage given in that issue to the F.A.S.C. Proposals to reduce some of the Amateur Bands, space was not available. It is now up to the S.w.l. Groups of each Division to assist Maurice Cox to keep this section alive.—Editor)

Hi fellars. This is your new scribe, so let me introduce myself to you. My name is Maurice Cox, WIA-L3055 (address as above), Secretary of the S.w.l. Group, Victorian Division of the W.I.A.

Firstly, I wish to thank our past Secretary and present Assistant Secretary, Ian Hunt, for his outstanding service for the Group in the past, in his duties as Secretary and Scribe. Ian has now passed on to the ranks of sending as well as listening, and I am sure we all wish him success on the bands that he has listened to for so long.

Now, seeing that this is my first attempt at doing anything like this, I hope you will bear with me and help in making these notes in the magazine a success. Please write to me with news from your Groups as to what you have been doing and future activities. Don't be frightened to write, I will answer either personally or via the notes.

We want to make the S.w.l. Groups a big success in this country; we have the numbers, but somehow not the complete interest. You see, I myself don't care much whether I become an Amateur or not. I like s.w.l., not only the Amateur bands, but also the s.w.b.c. bands. So in future you'll see not only news on the Amateur bands but also the s.w.b.c. bands.

To make a good job of these notes I want news, so again I am going to say "send me the news". I am certain you will chaps, so don't let me down.

If you have reports on either bands, write to me at my address, or phone me at my work, The Repatriation Department, MXY 110, Extension 311, and state what you have heard, when, and frequency, etc.

VICTORIAN S.W.L. GROUP

March.—I took the Secretary's chair for the first time since being elected in August owing to a slight delay in hospital with polio, anyhow we beat that okay. The meeting was attended by 13 members (more to come I hope in future). Ian Hunt reported that Council had increased the age from 16 to 19 years for Junior Members. Other Associate Members' fees to be considered in 12 months for reduction. A receiver station is to be set up in the rooms for our use, also Ian Thomas proposed that we Victorians challenge the rest of the States in the R.D. Contest. What about it chaps? (Challenge accepted by N.S.W.—See Correspondence.—Ed.) John McEwen suggested we encourage new members from the High and Technical Schools and this was agreed. Then yours truly gave a lecture on short wave reporting and Ian Hunt one on antennae.

April.—That was a beauty. Fred 3YS came along and gave us a demonstration on stereophonic sound. It was wonderful. So much so that I have asked him to come along again. Thanks very much for your demonstration Fred.

May.—Our honoured guest was Eric Trebilcock. He gave us a talk on what he has accomplished in 32 years of s.w.l'ing. He brought along cards to show us, some had no data on them, others were incomplete. He told us he has heard 256 countries and of them 247 confirmed, also he showed us his awards and there were some very nice certificates. Eric mentioned he listens an average of three hours per day every day, doesn't worry about conditions at all. He also said his listening comprises 90% c.w. and 10% phone. He stated that every s.w.l. should learn c.w. and should have his own card. In the last 32 years he has sent out 30,000 reports and received 15,000 cards.

The rx equipment is a baby Hallicrafters, two antennae—a long wire and a vertical. Most of his listening is done of a night when other countries are awake and we asleep. These are the main points of his talk which lasted 1½ hours and I could go on giving many more interesting facts of his talk. I would like to convey to Eric our whole hearted thanks for one of the most interesting and enjoyable talks that we have ever had. Many thanks Eric. We hope you may come along again sometime in the future.

June meeting will be a rx night so I hope you chaps will bring along your rx's to discuss and tell us all about them.

The card of the month I am going to keep going and also the mammoth one. George Fox was the winner of the January Card of the Month. I have forgotten what the call sign was. February, March and April—no card of the month. Apparently nobody received any cards in those months.

Ian Thomas has written me a couple of letters. He asks about the card of the month and the mammoth contest. Well Ian they are still going along. Thanks for your offer of service, I may ask for your help. Hope your antenna is up again. Yes, conditions were particularly good on most of the bands in April. Ian also reports having logged 180 DX stations on 15 and 20 mx during the month of May and logged two new countries—ZM6 and GI3—bringing his total to 62 countries heard. Has received cards from BV1US, PI1J and TI2HP. Good work Ian.

Ian Hunt received a letter from the Secretary of the VK2 S.w.l. Group (and passed it on to me) enquiring about the S.w.l. Notes and advising that the Group has a publicity officer and hope to have something for the notes in "A.R." Good show, just what yours truly wants. Thanks very much VK2.

Now here is a letter from a new member of the Group, E. Hutchins who hails from Hamilton, Vic. He writes me about his activities in the wireless world, "I have been interested for some years but pressure of farm work has not allowed me to follow it with any sort of fixed activity. However, I hope that within a few years I will have sufficient knowledge to try for a tx license. Have been working hard on c.w. My listening equipment at the moment is a bandspread Radiola which works very well on 80, 40, 20 and 15 mx and am at present building a converter to cover the other bands." Thanks a lot for your letter Mr. Hutchins and hope to hear from you again in the near future.

Max Hilliard won the VK3 listeners' section of the Ross Hull Contest. Congrats. Max.

NEW SOUTH WALES

Office-bearers of the N.S.W. S.w.l. Group are as follows: President, John E. Douglas, WIA-L2012; Vice-Pres., Barney Smyth, L2001, George Mains, L2023; Secretary, Tim Mills, L2052 (VK-2ZTM); Publicity Officer, Les Stahl, L2049; QSL Manager, Barney Smyth.

Now that the Group's teething troubles are over we feel that this year can be even more successful than last. Your President and office-bearers would like to see all city members attending the monthly meetings. We want to hear from country members (all letters will be answered). We want your ideas and suggestions. We especially want this year to be a successful and active one.

W.I.C.E.N.—Here the S.w.l. Group can be of use if the need arises. You should listen into practice sessions (first Tuesday of month at 8 p.m. 40 and 80 mx) and become familiar with the procedure. In times of emergency you could be needed as a second operator to your local Amateur. We intend to discuss this matter with W.I.C.E.N. Officer, Bob Winch (2OA) and see how we fit with the picture.

New Members.—The more the merrier, we would like each of you to obtain one or more new members. At the May general meeting of the Institute, there were 365 associates and 63 s.w.l's. on the books. We want to see the other 302 s.w.l's. how about it?

Meetings.—There will be at least one meeting per month and several outings this year. All meetings will be held at Gore Hill Technical College on the first Friday of the month until further notice. Good lectures for the year are being arranged. Many outings are beings planned including, we hope, a tour of the R.A.A.F. control centre at Richmond and the Bringelly O.T.C. Receiving Station.

Technical Group.—We hope to start a technical group to help you (particularly country members who cannot attend meetings) with your radio headaches. The actual form of this group has not been finalised. If you can assist or have any ideas on the subject let us know.

Log Books, Call Books.—We have log books if you want them. There is a new call book coming out this month. They will be obtainable from the Secretary of the Institute, P.O. Box 1734, G.P.O., Sydney.

NOTES

FEDERAL

150 WATTS PLUS OR MINUS!

The P.M.G. Department will be asked to permit an overall meter tolerance of 10% in relation to meters used by Amateur stations for purposes of measuring d.c. power input to the final stage of transmitters.

The Federal Council considers this justifiable since most meters with the exception of highly priced accurate instruments would vary by this amount. It is because of a permissable tolerance in manufacture of meters for general metering work that broadcast stations have a meter reading tolerance.

The P.M.G's. Departmental Radio Inspectors would normally allow for such tolerance in meters but cases have been reported where such was not the case and the Amateur concerned was reported for running a few watts above his licensed power when the d.c. input to the final was measured by the Inspector's naturally more accurate meter. From engineering principles, the few watts gained by a meter reading low by an acceptable tolerance would mean practically nothing in radiated power and signal strength at the receiving station.

REIMBURSEMENT TO MEMBERS OF PUBLICATIONS COMMITTEE

Due to the increase in the amount of work involved in producing the Institute's magazine, "Amateur Radio," Federal Council has agreed to a recommendation to the Headquarters Division (VK3) that consideration be given to implementing some form of payment to members of the Publications Committee for the work and time given to its publication.

If some suitable scheme can be arranged it should go a long way towards providing for more technical articles and of a higher standard.

A BETTER INTERNATIONAL AMATEUR RADIO UNION

The Federal Council has empowered John Moyle VK2JU, as the Amateur representative to Geneva, to arrange during the course of the I.T.U. Conference a meeting of I.A.R.U member representatives to discuss the organisation and operation of the I.A.R.U with a view to making it "work" more satisfactorily on behalf of the Amateur Service in the international sphere. One proposal will be that member societies contribute finance to enable the Union to function as it should do under its present constitution.

W.I.A. FEDERAL CONVENTION IN PERTH IN 1962

The Federal Council, subject to ratification, has agreed to the holding of a Federal Convention in Perth in 1962, the year the Empire Games will be held there.

The West Australian Division is most anxious for this to eventuate and are prepared to raise an estimated £300 as the difference between holding the Convention in Melbourne where it is generally held. It is suggested that considerable saving can be made by an application for reduced air fares; this will be investigated at a later date.

W.I.C.E.N. FREQUENCIES

The Federal Council will be asked to ratify proposals to standardise the frequencies of 7060 Kc. as the primary frequency and 7040 Kc. as the secondary frequency for the use of the Wireless Institute Civil Emergency Network (W.I.C.E.N.). It will also be asked that 3501 Kc. and 7002 Kc. be accepted as the national guard frequencies.

SHORT WAVE LISTENER AWARDS

The New South Wales Division of the W.I.A. has been asked by Federal Council to submit draft recommendations for short wave listener awards, etc. By encouraging short wave listening to Amateur Service transmissions and the formation of S.W.L. Groups and activities within the Institute, a useful growth of Amateur station licensees is envisaged.

FREQUENCY SHIFT KEYING

Proposals from the New Zealand Association of Radio Transmitters (Incorporated) for the use of frequency shift keying in bands other than above 29,700 Kc. have been studied by the New Zealand Post Office and approval has been given for the use of FSK in the following bands employing any degree of frequency shift up to 850 cycles:

Band Kc/s.	Frequencies for FSK Kc/s.
3,500 — 3,900	3,500 — 3,550
7,000 — 7,300	7,000 — 7,050
14,000 — 14,350	14,000 — 14,100
21,000 — 21,450	21,000 — 21,100
26,960 — 27,230	26,960 — 27,230
28,000 — 29,700	28,000 — 28,100

MORSE CODE PRACTICE TRANSMISSIONS

The following morse code practice transmissions are currently operating for those who want to obtain regular practice for the A.O.C.P.:

VK2 Division on 3573 and 7050 Kc. Monday evenings 2030 to 2100 hours E.A.S.T.

VK3 Division on 3550 Kc. each Sunday 2030 to 2100 hours E.A.S.T.

VK4 Division is not operating at present.

VK5 Division on 3504 Kc. Sunday evenings 2100 to 2130 hours Adelaide time.

VK6 Division on 3600 Kc. using m.c.w. and 50 Mc. using c.w. Wednesday evenings at 2000 hours W.A.S.T.

VK7 Division on 3515 Kc., 1915 to 1930 hours E.A.S.T. nightly except Tues. & Sundays.

VK9 Division is not operating at present.

The New Zealand Air Force station ZKF also transmits morse code practice transmissions every night at 1830 (N.Z. time) on 3324 and 6685 Kc.

W.I.A. OFFICIAL BROADCASTS

At the Federal Convention held in Melbourne during Easter the Federal Council discussed the times and frequencies used by the official WI stations for the Sunday morning broadcasts and intrastate hook-ups following the broadcasts. Subject to ratification by all Divisions the following table was agreed to:

Official Broadcasts on 7146 Kc.

VK2	1100	hours Eastern Aust. Standard Time
VK3	1030	" " " " "
VK4	0900	" " " " "
VK5	0930	" " " " "
VK6	1130	" " " " "
VK7	1000	" " " " "
VK9	0830	" " " " "

Intrastate Hook-ups on following Frequencies:

VK2 7050 Kc.	VK6 7085 Kc.
VK3 7135 Kc.	VK7 7115 Kc.
VK4 7105 Kc.	VK9 Freq. not specified
VK5 7125 Kc.	VK3WIA 7095 Kc.

There is no reason why this table should not be ratified and as soon as this is done Divisions will be officially notified of its implementation to take place forthwith.

CONTEST CALENDAR

Compiled by W.I.A. Fed. Contest Com.

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NATIONAL FIELD DAY:

Comments on any changes to the F.C.C., W.I.A., Box 871B, G.P.O., Hobart, Tasmania.

REMEMB. DAY CONTEST, 1959:

Dates. Saturday, 15th August, to Sunday, 16th August, 1959.
Duration. 1800 hrs. E.A.S.T. to 1759 hrs.
Rules. As published "A.R.," June, 1959.
Logs. Return postmarked not later than 6th September, 1959.

SCANDINAVIAN ACTIVITY CONTEST:

Dates: C.W.—1500 GMT, Sept. 19, to 1800 GMT, Sept. 20, 1959.
Phone—1500 GMT, Sept. 26, to 1800 GMT, Sept. 27, 1959.
Rules. Watch "A.R."
Logs: Mailed not later than 15th Oct. '59 to Contest Manager, S.R.A.L., P.O. Box 306, Helsinki, Finland.

VK-ZL DX CONTEST, 1959:

Dates: Phone -1000 GMT, Saturday, 3rd Oct.—1000 GMT, 4th Oct.
C.W.—10th Oct.—11th Oct., 1959.
Rules. Overseas, as for 1957. VK-ZL, Bonus value altered (watch Aug. "A.R.").

"CQ" WORLD-WIDE:

Dates. Phone—Last week-end Oct. '59.
CW—Last week-end Nov. '59.

LIMITED LICENSEES SEEK TO PRACTICE MORSE CODE ON V.H.F. BANDS

A motion discussed at the Easter Federal Convention seeking permission for licensees holding Limited A.O.C.P's. to practice morse code on the v.h.f. bands in which they are licensed to operate was defeated by four votes to one, with two Divisions refraining from voting. The general feeling was that full licensees cannot use the bands (including the v.h.f. bands) for this purpose prior to obtaining a license and in view of the morse code practice transmissions currently in operation for this purpose the Federal Council, by a majority, agreed that adequate facilities were available for Limited license holders to obtain practice without needlessly cluttering up the v.h.f. bands. If this is the real reason for wanting such a facility, then it would seem the Federal Council made a wise decision.

SUMMARY OF W.I.A. I.T.U. FUND CONTRIBUTIONS

Licensed Amateurs

Division	Amount	Subscribers
VK1	£30 19 0	13
VK2	£708 6 0	813
VK3	£590 10 6	434
VK4	£155 7 9	131
VK5	£255 18 6	183
VK6	£137 15 0	110
VK7	£88 12 3	78
VK9	£33 15 5	23
Total	£1991 4 6	1484

Associate Members, S.W.L's., Miscellaneous

Division	Amount	Subscribers
VK1	£9 10 6	3
VK2	£126 9 5	97
VK3	£22 15 6	30
VK4	£14 5 0	8
VK5	£10 2 0	11
VK6	£4 8 0	5
VK7	£26 6 6	17
VK9	£1 0 0	1
Total	£214 16 11	182

Overseas

Hong Kong Amateur Radio Society and VS1 Amateurs	£30 5 0
Trade Organisations	
Ducon (Aust.) Pty. Ltd.	£30 0 0
Trimax Transformers Pty. Ltd.	5 0 0
	£35 0 0
Grand Total	£2,256 6 5

It is estimated that expenses of organising the Fund including air fares to bring the W.I.A. representative to Melbourne for meetings of the Frequency Allocation Sub-Committee will not exceed £250.

The Fund will close on July 31. If you have not already subscribed please address your donation to Federal Secretary, W.I.A. Federal Executive, Box 2611W, G.P.O., Melbourne, before this date. All contributions will be gratefully received. Help us to reach the target figure of £2,500.

NEW SOUTH WALES

The May general meeting of the Division was held at the usual venue, Science House, Gloucester St., Sydney, on Friday, 22nd May. The President, Dave 2EO, opened the meeting at 8 p.m., there being some 63 members present. The only visitor present was 2XN from Strathfield. Following the usual formalities, the meeting was thrown open for business and it was decided to make a donation to the Ralph Basden Fund. Mr. Basden has for some years made available all the facilities of the Tighes Hill Technical College to the Hunter Branch for their meeting and conventions, all this being done without charge to the Branch. New members totalling 21 were admitted to membership, the membership of the Division now stands at 1102.

Council would like to congratulate those who undertook the recent relays in connection with the Sunday Broadcasts, and would thank participants for their efforts in this regard.

The President made comment on the progress made in the campaign to bring to official and public notice the recommendations of F.A.S.C. Interest has been created in an unprecedented manner, the response was most gratifying, and the result is that the matter has now reached high political level. Council is justly proud of the members' support, and would thank all who took action in this matter. Do not rest on your laurels chaps, but continue to support F.E. and Alan Fairhall in their difficult task.

The lecture was delivered by Max 2OT, his subject being "Command Receivers," and he outlined the confusion in the mind of a newcomer to Amateur Radio, as to the best type of receiver to purchase. Max dealt with the shortcomings of commercial communication receivers in general, and pointed out that by a little thought that the Command Receiver can be utilised to advantage. He demonstrated that by stacking these units a very good receiver can be set up, and one which will have most of the attributes required in any receiver for Amateur use.

Following question time, Frank 2QL, in moving a vote of thanks to the lecturer, drew notice to the attentive manner of the members and further testified to the excellence of the units discussed. The meeting closed at 10.25 p.m. and members adjourned for coffee and the usual ragchew.

HUNTER BRANCH

Annual Dinner and Blackall's Field Day.—Yes, they will be on again this year. A bit early to make the announcement, but will give you chaps a chance to save up and go on a diet. The dates, oh yes—Oct. 3 and 4.

At the May meeting we were favoured by a visit from our Divisional President, Dave 2EO, and Max 2OT. Dave gave us the dope on some Divisional matters, whilst Max expounded how he made the Command rx's work the way he wanted them to. I have been given to understand that Max is writing in like vein for "Amateur Radio." (Be pleased to receive same. —Editor.) The following interested gang were present: VKs 2ZDL, 2RJ, 2ZJR, 2AOR, 2AKX, 2AHA, 2XT, 2ZK, 2AFA, 2ZL, 2CS, 2ALA, 2RU, 2AQR and associates Sutherland, Bob Bailey, Jones, Gray, McLachlan, Foster, Middlehurst and Rod Bailey. The latter is a new associate whilst Keith 2AKX is also a welcome new face. Apologies were received from Fred 2AEE.

Dave and Max arrived late which was only to be expected as they were waylayed by the Gosford mob and apparently only got out of their clutches by bringing some with them. Welcome Gosford, come again. Congrats. to Ron Roberts in attaining his call, 2ZRR. Stuart 2ZDF will be absent for some months in Melbourne or some other foreign land. Congrats. to Bill 2ZL for passing his 2,000th contact with 2AQR; condolences to the latter for being on the other end.

No doubt you all heard the excellent speech from Lionel 2CS over 2AWX the other Monday night, he certainly did himself proud. A newcomer to the call-backs was Maurie 2VN. We are all pleased to hear that one of our members, Bill 2ZK, is now President of the Newcastle Branch of the I.R.E. The wandering insecticide from Taree, Bill 2AYE, has been visiting this away and called on the two Bills, 2XT and 2ZL. Of course I am not surprised.

A speedy and we hope the most reliable delivery of your disposal items has been formulated by your committee. If you wish to avail yourselves of this service, make a notation on your disposal order form stating that you wish to use the bulk transportation service to Newcastle and then the stuff will be sent to Varley 2SF, with your name on it. Do this each time you send in your application to Sydney.

Well chaps, the July Branch meeting will be at 8 p.m. on the 10th at the Newcastle University of N.S.W. at Tighes Hill and the social at Bill Hall's on Wed., 22nd.

VICTORIA

MELBOURNE UNIVERSITY AMATEUR RADIO CLUB

The inaugural meeting of this club was held on 7th May when 31 members were present, 20 of whom were licensed Amateur Radio operators. The aims of this club are to foster and further interest in Amateur Radio among the students of this University, and at a recent committee meeting activities were proposed in accordance with this aim.

It is hoped that these activities will include the following:

Short lectures in which it is hoped to demonstrate how electronics play a part in the work of many different departments at the University. Morse code practice classes for those who wish to attend, to be held at lunchtime. A regular activity on Friday night, centred around a club station which we hope will commence during next term.

One rather interesting feature about membership is that all financial members of the Students Union are members of the club. This is in accordance with certain requirements of the Students Representative Council and so the membership is extraordinarily large, being over nine thousand.

Non-students wishing to join may do so if they are either members of staff or past students. Full details may be obtained from a member of the Committee as follows: President, M. J. Owen, 3ZEO; Secretary, G. F. Jenkinson, 3ZFA; Treasurer, M. R. Osborne, 3ZCZ; R. Babb, 3AUB; S. Makareth, 3ZIS; T. Godding, 3ZGG; P. A. Lowe, 3ZOO; D. Seedsman, 3ZIE.

WESTERN ZONE

Herb 3AJJ, who has been in our zone for the past few years, will soon be leaving us. He is going to Melbourne where he will be employed at one of the metropolitan t.v. stations. We are sorry Herb is leaving us but wish him all the best of luck in his future occupation.

Keith 3AKP has recently acquired a shop in Main St., Stawell, and he will be conducting a radio sales and service therein, so we also wish Keith all the best in his future business career.

NORTH EASTERN ZONE

Bob 3UW using mobile gear and when the rain shorts out the coil on the aerial he throws a length of wire over the nearest hedge; puts out quite a good signal, too. Things at Smoko are just so so with Arthur having to repair tanks and bucket water while they are under repair, however it hasn't stopped Arthur working DX on 80 and 20 mx. Quite a few antenna changes as well; better have good modulation when contacting Arthur as he has hi-fi speakers on his rx. 3AHO received his DXCC for both s.s.b. and a.m.; how do you manage to get the confirmations, Bill?

Winter Convention is now postponed for this year, but you can expect the Annual Convention to be in November—date to be decided.

3UW expects to get on the zone hook-up soon with 150 watts. Not many get on the hook-up lately—3WQ, 3AXW, 3AXL, 3AUL being among the regulars; Bruce 3AGG managed it one night also. Ken 3KR has the wog, however that is no excuse to kid me on to 40 mx and not come up to talk to me when I do! Think I will go back to 20 mx. The only one in the zone who is game to talk to me is the Secretary. Film tins still come this way for the Benalla and district news. George 3GD still working the bands consistently, nice signal too. Peter 3APF still experimenting with t.v. reception. Sid 3CI managed to get a quad up for ten metres and enjoying quite a few contacts from his new QTH. The rest of the antenna farm is still to be erected. Ted 3AOB also playing around with t.v. antennae. Like to welcome 3ZIM, of Toolamba, who I understand is playing around with 288 Mc.

SOUTH WESTERN ZONE

The zone seems to still be very busy, quite a lot of activity on the various bands. The zone has had rather a black cloud passed over it recently owing to the loss of Bill Barrett, 3WT, of Geelong, who was a foundation member of the Geelong Radio Club. To his relatives we all pass on our deepest sympathy.

Bill 3AWZ has left the zone and is now in the metropolitan area. We were very sorry to hear that Bill was leaving us as he was also a good member of Geelong Club.

Well chaps don't forget the South Western Zone Convention to be held in Warrnambool, 31st October-1st November. There is plenty of nice motels for those who require same; price is right. Gordon 3AGE is in a new business and only gets on the bands when Bill Wines talks him into it; good luck in your new venture, Gordon, from all the Zone.

QUEENSLAND

MARYBOROUGH

4DJ working on d.s.b. and voice-controlled transmissions with good results. Is also building xtal controlled converters. Grahame received a QSL from Mars so is now working for the W.A.P. (Worked All Planets) award. 4CB has repaired his G4ZU and is again working on 21 and 28 Mc.; Arch is now modulating deeper. 4BG is breeding budgerigars in his shack; training one to call "CQ DX" for you, Ron?

4AI recorded greetings from six DX stations and played them at an Apex International Goodwill Dinner. This received good publicity in the local press. Alan has built a xtal converter for 21 Mc. and is now building a 3 el. beam for 21. Has also been using a 14 Mc. dipole, and has been grinding xtals into the bands (and sometimes out of them). Alan had the bad luck to have his final take off when he was out of the shack and now has for sale an open plate transformer and choke and a melted 6146. Any offers?

Ex-VK2AJF now resident here, but not yet active.

TOWNSVILLE

At the last meeting of the T.A.R.C., I was taken to task because I did not mention the name of the club when giving reports on the meetings. Apparently some think I may be trying to report doings of a golf club or fishing notes in a radio magazine. The main business of the meeting was taken up with reports from various members. Rex 4LR (at home on vacation) told of how he attended meetings in Brisbane, and expressed very forcibly his views on the raw deal the country chaps have been getting. Mike 4OM (just returned from Melbourne) delivered the various pieces of gear he purchased for members and arranged to open a credit account with one of the firms. Bob 4RW reported on doings within the W.I.A. and spoke for some time on F.A.S.C. and again asked that those who did not subscribe to the I.T.U. Fund to do so and that although the T.A.R.C. did make a donation, it did not bar each Amateur from making a personal donation. Just about 80 per cent. have done so. All donors being ticked off in my little book. It was also decided that "CQ" Anthology be purchased for the library and that Rex 4LR Brian 4ZBW and Bill 4ZBE represent our club at the Palm Beach Convention in June.

As 50 Mc. activity is waning due to fading, the local boys are operating 144 Mc. and have made the grade to Charters Towers (60 miles air line), and Colin 4CE and Vern 4LK from there have worked Ken 4ZAK here in T'ville.

Bill W6AL has visited many Amateurs in the various towns. He called at my shack on the way south from T'ville. Says the boys along the way were real "Guys" and turned it on for him.

John 4DD out of hospital convalescing; did not visit you John because was sick myself for three weeks. Charlie 4BQ at long last broke the silence barrier and had a QSO on 7 Mc. with 4RW; needs to have an injection from a gramophone needle, otherwise will not make the "ragchewers club". Claude 4UX now in Ayr and has promised to abduct John 4DK for next meeting. John very busy in private practice and not much time for radio. Arthur 4FE again shifted—now the northernmost VK4 on the Mainland; called in on Owen 4OV at Mt. Isa on the way to Normanton.

Nick 4WT shifted to Wulguru to cause local QRM; has been visiting far north and called in on Basil 4ZW. Brian 4ZBW dismantling gear en route to Darwin. How about getting around Eddie 5OW, George 5NE, Roy 5BV and start a club up there and write a few notes on the doings? Certainly a thankless job as zone correspondents come and go, but we like to know what is happening around our shores.

Basil sends along the doings from Cairns. Activity at present at a very low ebb, just the usual old stayers. Bob 4TK comes on daily for sked, talks about going off the air again, because he is too busy. Claude 4ZY and Bill 4XM ragchew on old times regularly on 7 Mc. The highlight of the month was the visit by W6AL; what a gentleman this chap is. Certainly stirred me up, even got me thinking about s.s.b. One night he showed coloured slides when the visitors included 4AX Roy and XYL, Claude Vautin and Afton Westcott journeyed from Atherton to be present. I got to bed at 1.30 a.m. Basil hopes to get

the boys together and visit Townsville for a special meeting some Saturday night. Also toys with the idea of operating a station at the local trades and industries fair.

SOUTH AUSTRALIA

We must surely all thank the V.h.f. Section for bringing forward the excellent programme provided at the last monthly meeting, when, under the guidance of Les Harper, we were steered through, by word and films, the complexities of radio aids to navigation, particularly as applied to the Australian aviation needs.

It was obvious that Les had a lot more he would like to have told us, but he did well to condense such a vast subject into the time limit, yet giving all the pertinent details necessary to grasp "why and what" of the aids dealt with, which ranged from the humble radio compass to distance measuring equipment and blind landing equipment.

Films ranged from a set of slides of a trip he did to Ayers Rock with dead reckoning as the navigation method, to movies showing actual "talk down" by advanced radar methods, with all between.

Wall charts added to interest and made it easier for him to explain in detail a number of terms not all known to "non flying" types, as indeed most of us always will be.

The responsibility of "those up front" and "the boys on the ground" who maintain these things is fairly great, yet what a comfort to those who use the air, to know the skills that are placed for safe air travel.

One mistake Les did make was in mentioning a certain b.c. station that was heard "loud and clear" at Townsville and as a result an ideal station for d.f. work. It was almost impossible to contain Warwick after that, in fact for several minutes the sound of busting waistcoat buttons was all we could hear.

Naturally he, Warwick 5PS, had to pass the vote of thanks which he did without using more than 500 words or so. (Gosh, is that all! Editor).

The various important matters arising from the forthcoming I.T.U. Conference and speeches by persons associated with the build up to that end have added some confidence to the matter of W.I.A. observer attendance. Thanks to VK3 Sunday Broadcasts on 20 mx we have been able to keep in touch, and have heard the various addresses. That's an idea for the future, what about a W.I.A. Federal Broadcast on 20 at regular intervals, would keep country members, which is a fair proportion of our numbers, up to date on Federal matters.

Whilst on the matter, if you have not as yet sent your sub. in for I.T.U. Fund, don't delay any longer, send direct or through the Divisional Secretary or Treasurer.

We have a new Treasurer in Les Goldfinch, who has stepped into the vacancy caused by resignation of Clem Appleby who had to vacate on pressure of duties elsewhere; can't give you Les' address as yet but he is closely associated with Secretary John, so address c/o. Box 1234 will find Les OK.

QSL distribution, in hands of George 5RX, address 27 Belair Rd., West Mitcham, is a bit slow in the last few months. Quite a few fellows don't collect theirs at the meetings, or who don't get along anyway, so George is accumulating quite a quantity. Make it easier fellows and send along a self addressed stamped envelope to George for your cards, and when you get one lot send another envelope, to keep the files clear. There are quite a lot to be distributed and some of those rare ones you have been waiting for might be there waiting for you.

Dudley 2DQ, a VK5 Division member, dropped in on a QSO recently, using a s.s.b. rig generating on fundamental frequency, the advantages of which offer themselves for others to follow. Dudley happens to be a pal of Doc 5MD, haven't found out if that's a good thing or a bad thing, but in the course of the QSO he was asked by a VK3 a question re "Doc" so Dudley described Doc's profession, not medical, but "curing souls," can you beat that Pansy?

Dropped in on Hurtle 5HW, recently, and found him investigating the mysteries of a prop pitch motor, and coaxing its works to accept some grease. A nice set-up at that QTH with plenty of evidence of success on DX judging by the many Award Certificates adorning the walls. A separate room built for the job and at the foot of the tower, provides a good layout and short leads from the full sized 3 el. on 20. Home-brew gear puts out a very potent signal—mostly on 20—with an AR7 rx as the hearing aid. A very cosy set-up for winter also, from heat from a fuel fired room heater; a junior op. becoming interested who may share the rig some day.

Slow morse practice from Doc 5MD at 8 p.m. each Sunday on 80 still attracts great interest, you will remember Tom 5TL did this whilst Doc was on vacation. A good service to those gaining speed, and for those who want some really fast c.w. call him after 9.30.

Burnie 5WC advises their new shack not yet passed the drawing board stage, still using his home QTH and a good signal, heard often on 40. Chas. 5ON gave a burst recently after a fair spell, reason not known but nice to hear the voice again. Ron 5FY at Elizabeth vying with Tubby 5NO for those rare ones on 15. Heard occasionally on 40, mostly Sunday mornings. Reg 5RR continues to make a good number of contacts on d.s.b. and now finds himself somewhat of an authority on that mode of transmission, that is, judging by the queries he gets and the number of fellows who are following his lead.

Had any more callers lately Athol 5LQ? Not heard on 40 lately, too busy on 15 c.w. maybe. Those of us who growl about conditions on 40 these days could take a lesson from Luke 5LL and Frank 5MZ and perhaps Carl 5SS who seem to make it work for them each night to VK3, perhaps they have a special "duet," but conditions or not they seem to make it. Cheers Reg and Jim. Heard that Ern 5EN was on 40 recently, heat up the rig more often Ern, don't let the one-eyed monster take over. Where is that melodious Rex 5DO voice lately? Too much painting or hi-fi?

TASMANIA

Our congratulations go to Ken 7KM on the occasion of his recent marriage and, as well, on the gaining of his Doctor of Philosophy Degree at the University. As Ken is the recipient of a scholarship which will take him to the Massachusetts Institute of Technology for several years to further his studies into cosmic rays, this Division was pleased to elect him an honorary member during his absence. Our congratulations are also due to George 7GC and his XYL on the acquisition of an harmonic. Yet more congrats., this time to Roy Emmett on obtaining his limited license at the beginning of June.

Any one of us would have been delighted to be called by ELAA, but Jack 7JB was more delighted than most, because it meant he has now worked all Zones. Very good work, OM. Max 7MX has recently put up a new antenna, strictly in accordance with the handbook. What is more, it seems to be working strictly in accordance with what the handbook claims, judging from the reports he is receiving these days. 7FH has been heard putting in a strong signal in the south and the modulation sounds good too. Harold 7MZ recently got a modulator working very nicely, a new departure for you. We hope, Harold, that the hook-up wire you used was not out of the keying circuit.

Several VK7 stations were very busy about the middle of May exchanging numbers with ZLs on the 80 mx band in their Sangster Shield Contest for low powered stations. Judging from the number of ZLs to be heard with good signals, this Contest clearly demonstrated that high power in itself is not necessarily the answer to getting out successfully, but rather that efficiency, both in tx and antenna, do play a significant part.

The QSL manager has had a very busy time in May, despatching the record number of 771 outward cards. Some "personality" stations have been heard in VK7 during May. George VE2LI during our QSO on 24th May asked me to convey his very 73 to his numerous Tasmanian friends. Obe W9DSO, QSL manager for the 9th district, tells me he handles about 3000 cards a week. Clive VK0CC has been putting in a wonderful signal on 80 mx. Five mobile marine stations have been active, a GM3 on 80 mx, an OZ4 on 40 mx, and three Ws on 15 mx. Don W1TS has appeared in print in "QST" in recent months.

2 mx activity is receiving quite a boost with the attempts by 7ZAK and 7MY to establish contact with 7BQ and 7LZ in the north. We hope that there will be sufficient heat generated by the portable gear on the top of Mt. Wellington to melt the ice of the antennae, chaps. Alan 7MY has a new tx on the air in which a pair of 6146s modulate an 813 in the final. The whole rig is band switched.

Seven Associate Members were elected at the June meeting of the Division. All of these chaps are currently doing the A.O.C.P. course at the Technical College. A panel of names was suggested at the June meeting out of which, it is hoped, Council will be able to select a balanced and thoroughly efficient group to compose the Federal Contest Committee, after obtaining their appointment from Federal Council. We compliment the VK9 Division for their initiative in naming July as their 80 mx contest month. I shall certainly be looking for VK9 contacts on that band during that month.—7ZZ.